Agriculture

Forest
Service

Washington, D.C

Report of the Forest Service

Fiscal Year 1984

RPA

Chief

12th and Independence Ave., SW
P.O. Box 2417
Washington, D.C. 20013

National Forest System

Northern Region
Federal Bldg.
P.O. Box 7669
Missoula, MT 59807

Rocky Mountain Region
11177 West 8th Ave.
P.O. Box 25127
Lakewood, CO 80225

Southwestern Region
Federal Bldg.
517 Gold Ave. SW.
Albuquerque, NM 87102

Intermountain Region
Federal Bldg.
324 25th St.
Ogden, UT 84401

Pacific Southwest Region
630 Sansome St.
San Francisco, CA 94111

Pacific Northwest Region
319 SW Pine St.
P.O. Box 3623
Portland, OR 97208

Southern Region
1720 Peachtree Rd., NW.
Atlanta, GA 30367

Eastern Region
310 West Wisconsin Ave.
Milwaukee, WI 53203

Alaska Region
Federal Office Bldg.
P.O. Box 1628
Juneau, AK 99802

State and Private Forestry

State and Private Forestry offices are located in the Regional Headquarters, except for the Eastern Region. This S&PF office is at:

Northeastern Area—S&PF
370 Reed Rd.
Broomall, PA 19008

Forestry Research

Intermountain Forest and Range Experiment Station
507 25th St.
Ogden, UT 84401

North Central Forest Experiment Station
1992 Folwell Ave.
St. Paul, MN 55108

Northeastern Forest Experiment Station
370 Reed Rd.
Broomall, PA 19008

Pacific Northwest Forest and Range Experiment Station
P.O. Box 3890
Portland, OR 97208

Pacific Southwest Forest and Range Experiment Station
1960 Addison St.
P.O. Box 245
Berkeley, CA 94701

Rocky Mountain Forest and Range Experiment Station
240 West Prospect Ave.
Fort Collins, CO 80526

Southeastern Forest Experiment Station
200 Weaver Blvd.
Asheville, NC 28804

Southern Forest Experiment Station
T-10210 U.S. Postal Service Bldg.
701 Loyola Ave.
New Orleans, LA 70113

Forest Products Laboratory
Gifford Pinchot Dr.
P.O. Box 5130
Madison, WI 53705

The Forest Service

The Forest Service, U.S. Department of Agriculture, is responsible for Federal leadership in forestry. It carries out this role through four main activities:

- Protection and management of resources on 191 million acres of National Forest System lands.
- Cooperation with State and local governments, forest industries, and private landowners to help protect and manage non-Federal forest and associated range and watershed lands.
- Research on all aspects of forestry, rangeland management, and forest resources utilization.
- Participation with other agencies in human resource and community assistance programs to improve living conditions in rural areas.

United States
Department of
Agriculture

**Forest
Service**

February 1985

Report of the Forest Service

Fiscal Year 1984

•CHIEF'S•MESSAGE•

I am pleased to transmit the Annual Report of the Forest Service for fiscal year 1984. Our Agency is responsible for managing the National Forests and Grasslands, providing technical and financial assistance to State forestry agencies, and conducting forestry research.

In all our activities, we emphasize the importance of professionalism, cooperation, and public service — traditional values that have come to characterize the Forest Service. A reverence for traditional methods, however, is not one of our traditional values. This year, we made great progress in our continuing effort to find innovative ways to manage the Nation's renewable resources.

The first installations of our computerized data and communications system are now in place, providing managers with the complete, up-to-the-minute information they need to make resource decisions. In the process of automating our offices, we are discovering not only faster, but better ways of doing business. This year with the help of a national review team made up of employees from various disciplines, we found ways to cut administrative costs throughout the Agency. Together, these efforts will help us streamline operations, save money, and, most importantly, serve the public better.

Issues that received national public attention in 1984 included the designation of wilderness on National Forest System lands, the economic viability of some timber sales, and roadbuilding, especially on our western Forests.

The 98th Congress decided on wilderness release language, clearing the way for the passage of wilderness bills in 20 States. These bills added 6.8 million acres to the National Wilderness Preservation System. Of the roadless inventory, 27.7 million acres are now released for multiple uses other than wilderness.

The Forest Service timber sale program again made money for the U.S. Treasury in 1984. In addition, timber and miscellaneous product sales enabled us to accomplish other objectives, such as providing roads for public access, creating wildlife habitat, and protecting forests from insects, diseases, and fire. Although some sales, such as salvage and fuelwood sales, did not return immediate net revenues, these sales were only a portion of the total program. Overall, the value of the timber sale program on the National Forests exceeded timber sale costs.

Discounting for inflation, the cost of building roads continued to come down in 1984, as did the number of miles of road built. Planning efforts, conducted with full public participation, insured that these roads were environmentally sound and necessary to the use and enjoyment of the National Forest System.

The following pages will more fully describe the activities and accomplishments of the Forest Service in 1984. It was a highly productive year for our Agency. With minor exceptions, we met or exceeded all of our targets. In the process, we cut our costs, strengthened our programs, and adopted new technologies that will help us continue the Forest Service tradition of responsible resource management.

R. MAX PETERSON
Chief

•CONTENTS•

1/ Includes cooperative law enforcement.

•INTRODUCTION•

THE FOREST SERVICE—WHAT IT IS AND WHAT IT DOES

The Forest Service provides national leadership in forestry, influencing management of about one-third of the Nation's total land. The guiding principle for use of these lands is "the greatest good to the greatest number in the long run." Because the Forest Service is highly decentralized, most day-to-day decisions are made at the local level. The Agency's major jobs include:

Managing the National Forests and Grasslands

The Forest Service manages 191 million acres of public lands (consisting of 155 National Forests, 19 National Grasslands, and 18 Land Utilization Projects) located in 44 States, Puerto Rico, and the Virgin Islands. Its activities on these lands include selling timber; enhancing fish and wildlife habitats, managing recreation sites, identifying property boundaries, building and maintaining roads and trails, fighting fires, monitoring water quality, and managing grazing lands.

Cooperative Forestry

The Forest Service cooperates with the States and territories, local governments, forest industries, and private landowners to promote good forestry and land stewardship practices on non-Federal forest lands and to increase efficient wood use. Most technical and financial assistance is provided through State forestry organizations for a varied mix of projects such as controlling tree diseases, insects, and rodent pests; producing improved seedlings; reducing soil erosion; planting trees to conserve energy; reforesting harvested or burned-over lands; improving timber stands; protecting against fire; and developing fish and wildlife habitats.

Forest Research

The Forest Service research organization provides leadership in forest and rangeland research throughout the United States. Forest Service researchers study the biological, physical, and social sciences, often cooperating with forestry schools and agricultural experiment stations. This research includes developing disease-resistant seedlings, mapping lightning fires, controlling forest pests, and improving wood processing efficiencies. Research results are made available through publications, films, workshops, computer programs, and other methods.

The Forest Service also represents the U.S. in most world forestry matters. In cooperation with the Department of State and the Food and Agriculture Organization (FAO) of the United Nations, the Forest Service provides technical assistance to other countries to help solve their forestry-related problems.

Human Resource Development

Since the Civilian Conservation Corps of the 1930s, the Forest Service has participated in many human resource programs aimed at putting people to work and improving living conditions in rural areas.

FOREST AND RANGELAND RENEWABLE RESOURCES PLANNING ACT (RPA)

Overview of RPA

The Forest and Rangeland Renewable Resources Planning Act of 1974 (RPA), as amended, directs the Secretary of Agriculture to prepare a comprehensive, long-range assessment of the Nation's renewable resources and to develop a program for Forest Service activities.

The 1979 Assessment was supplemented in 1984 to prepare for the 1985 RPA Program. The 1985 Program and final environmental impact statement covering 1986 to 2030 will be transmitted to Congress in early 1985.

Annual Report to Congress

The RPA also requires the Secretary to submit an annual report to Congress on Forest Service accomplishments and progress in carrying out the RPA Program. This report covers fiscal year 1984 3/.

3/ Unless otherwise stated, all references to years in this report are fiscal years.

Required in the Annual Report are the following:

- A description of the status of major research programs, significant findings, and how these findings will be applied in programs.
- A description of the cooperative forestry assistance programs, and their accomplishments, status, needs, and work backlogs.
- A report on the progress of incorporating mandated standards and guidelines into the land management plans for units of the National Forest System.
- A summary of estimated expenditures -- on a representative sample basis, for reforestation, timber stand improvement, and the sale of timber from the National Forest System --compared to the return to the Government from such timber sales.
- An identification, on a representative sample basis, of advertised timber sales made below the estimated expenditures mentioned above.

This document includes other reports that Congress requires at the time of the Annual Report. These are as follows:

- A report identifying the amount and location, by Forest, State, and productivity class of 1) all lands in the National Forest System where land management plans have indicated the need to reforest areas that have been cut over or otherwise denuded or deforested, and 2) all lands with stands of trees that are not growing at their best potential.
- An estimate of the funds needed to successfully replant an acreage equal to the acreage to be cut over that year. Also, an estimate of funds needed to reforest enough lands to eliminate the reforestation backlog by the end of 1985.
- A report on the amounts, types, and uses of herbicides and pesticides used in the National Forest System, including the beneficial or adverse effects of such uses.

• ADMINISTRATION •

INTRODUCTION

In response to Government-wide efforts to reduce the Federal deficit, the Forest Service took steps to reduce administrative staffing, streamline the organizational structure, and improve efficiency while providing high-quality service to the public.

Productivity improvement teams were formed to find new ways for the Forest Service to cut costs and increase efficiency. Where feasible, offices were colocated or consolidated, and many administrative tasks were automated.

RECEIPTS AND EXPENDITURES

The Forest Service receives operating funds from Congress and from various cooperator deposits. Receipts are collected from Forest Service operations such as timber sales, grazing and recreation fees, and mineral leases and permits.

Receipts for 1984 totaled $1.18 billion, up 22 percent from last year's $966 million because of a greater demand for wood products. Expenditures totaled $2.09 billion, compared to $2.06 billion in 1983 (figure 1).

Timber receipts in the form of cash, deposits, and roads in lieu of cash (see roads, p. 29) totaled $945 million, which was 80 percent of total Agency revenue in 1984. Receipts from mineral leases, royalties, sales, and bonus bids were the second largest source of revenue at 12 percent of the total, or $136 million. Other sources included recreation fees, land use permits, grazing fees, and royalties from the sale of Smokey Bear and Woodsy Owl products (figure 2).

Managing the National Forest System in 1984 required 83 percent of all Forest Service expenditures. Forest Research spent 6 percent, Human Resource Programs 3.5 percent, and State and Private Forestry 3 percent of the budget. Working Capital Fund, used to replace vehicles and heavy equipment, amounted to 4.5 percent of expenditures (figure 3).

The Forest Service, as required by law, pays the States 25 percent of all National Forest receipts. These funds are to be used for public schools and roads in counties containing National Forest System lands. In 1984, the Forest Service paid $192.7 million to the States from money received from National Forests in 1983. In addition, a total of $9.9 million was paid to counties from National Grasslands and Land Utilization projects receipts from calendar year 1983. Minnesota received $712,000 under the Boundary Waters Canoe Area Wilderness Act.

PERSONNEL

The Forest Service employed fewer people in 1984 than in 1983. Peak employment (July) fell 3 percent from 50,976 to 49,220, mainly through attrition (table 8).

Figure 1
Expenditures and Receipts
(Million Dollars)

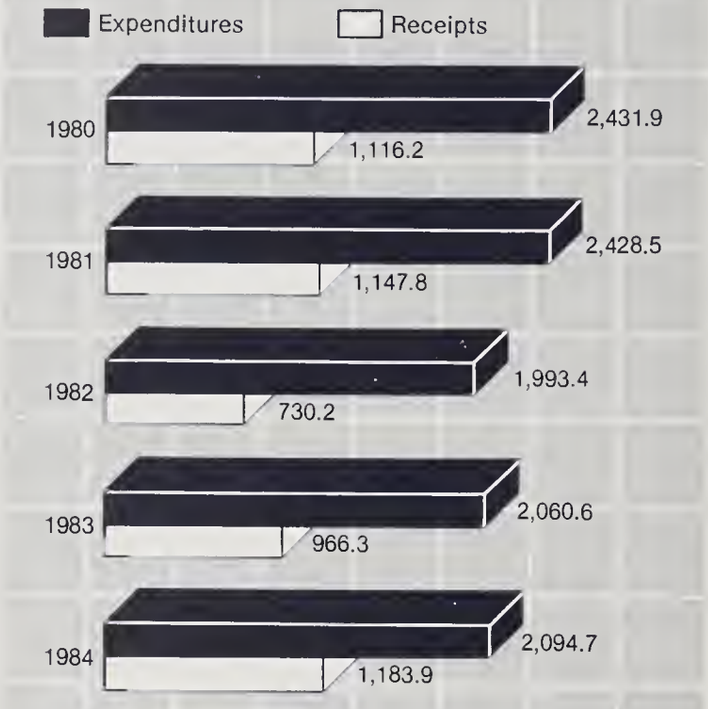
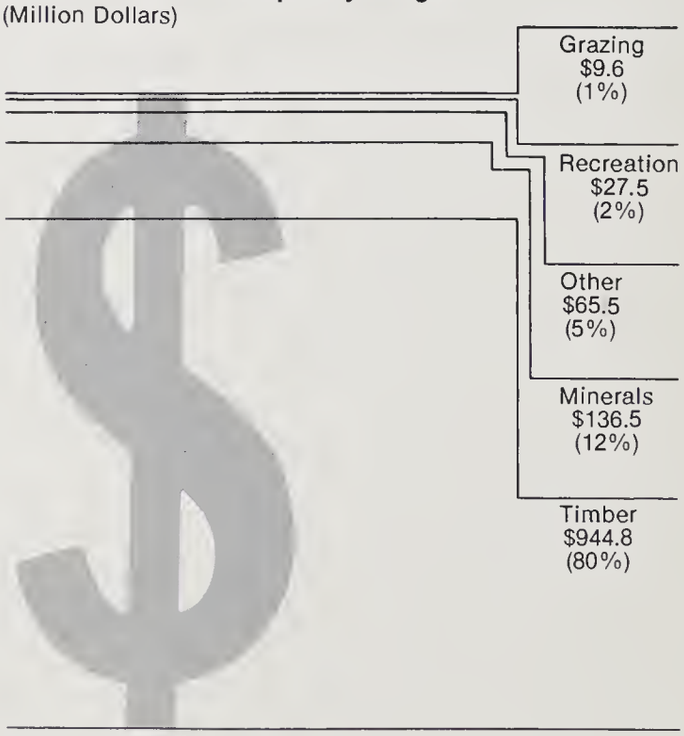


Figure 2
Distribution of Receipts by Program
(Million Dollars)



Total 1984 receipts—$1,183.9 million

There were 2 percent fewer permanent employees in 1984 than in 1983, with totals of 30,752 and 30,030 respectively. Our total work force has been declining since 1980, especially in the temporary employment category (figure 4).

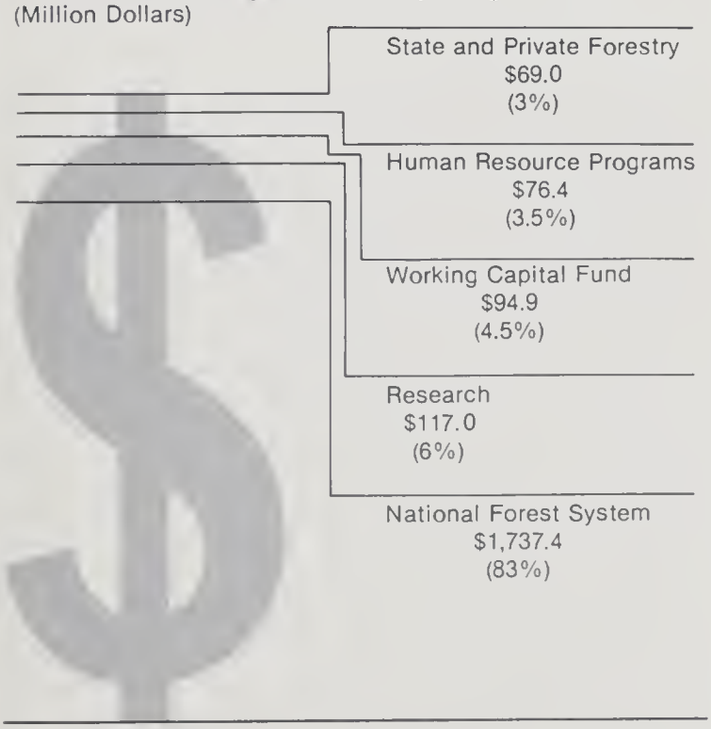
Ninety-three percent of all Forest Service employees work in the National Forest System. Research has 6 percent, and State and Private Forestry has less than 1 percent of the work force (figure 5).

Fifty-three percent of Forest Service employees (22,289) are in technical occupations (table 7); a large portion of these are forestry and engineering technicians. Professional employees are the second highest category, totaling 26 percent of the Agency's work force. Foresters and civil engineers remain the largest professional occupations in the Forest Service.

INFORMATION MANAGEMENT

The Forest Service continued this year to install a system of distributed information processing throughout the Agency. The goal is to provide most field offices with common word processing, data processing, and telecommunications capabilities by the end of 1986. Systems are now operating in the Washington Office, all Regional Offices and Research Station headquarters, as well as in many National Forest and Ranger District offices.

Figure 3
Distribution of Expenditures by Program Area
(Million Dollars)



Total 1984 expenditures—$2,094.7 million

Figure 4
Distribution of Work Force by Tour of Duty
(Number of Employees as Reported in July)

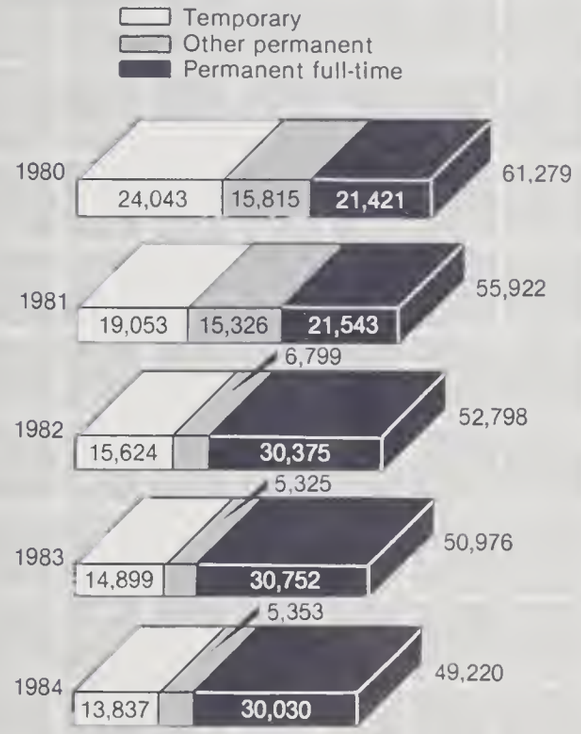


Figure 5
Distribution of Work Force by Program Area
(Number of Employees as of September 30, 1984)

National Forest System[1]	38,799	(93%)
Forest Research	2,651	(6%)
State and Private Forestry	217	(1%)

[1]Includes Office of Information, Programs and Legislation and Administration

The Chief can now communicate with his top management staff nationwide in a few minutes using the electronic mail facility on these systems. Standardized, time-saving procedures for many administrative activities are now being used at those locations that have this state-of-the-art technology. As a result, we are beginning to see many of the benefits anticipated, including increased productivity, and more timely and accurate information.

In 1983, the Chief had chartered a national team to examine how the Agency could best use this new technology. This year, the team completed its report outlining ways to improve information management and standardize our computing activities. The first pilot study recommended by the team showed how to reduce the amount of information required in the annual budget process. Other information-requirement studies will be completed by 1985.

PRODUCTIVITY IMPROVEMENT

The Forest Service took steps to reduce administrative staffing by at least 265 full-time equivalent positions (FTE's) by 1987 for a savings of $4.9 million annually.

To accomplish this, the Forest Service studied various ways to reduce administrative costs. Teams were formed to provide recommendations in five broad categories: centralization; procurement, contracting and property management; budget, finance, and accounting; other business management; and personnel. Some examples of improvements now underway are: centralize adverse action authority at the Regional level; use standard job descriptions more often; reduce number of personnel offices from 334 to about 66; eliminate most working capital operations, e.g., 63 fleet repair shops, a sign shop, and 2 photo reproduction labs; automate bid preparation; develop a centralized bidders' list that Regions and Stations can use; and automate GSA-Fed Strip ordering.

To improve productivity and reduce costs in other areas, the Chief appointed Productivity Improvement Teams (PIT) to study fleet management, timber sale volume, collections, and wood residue. The Agency also evaluated progress in carrying out recommendations of eight previous PIT studies.

To further streamline operations, the Forest Service combined the support services for the Pacific Southwest Forest and Range Experiment Station in Berkeley with those of the Pacific Southwest Region in San Francisco. A reorganization of the Engineering program is expected to reduce 64 FTE's by the end of 1986. Also, the Glide and Steamboat Ranger Districts on the Umpqua National Forest were combined as were the Dale and Ukiah Ranger Districts on the Umatilla National Forest.

As part of the Forest Service History Program, an organization of private citizens called Friends of Grey Towers was established. The "Friends" will help raise funds needed to operate and maintain the Pennsylvania home of Gifford Pinchot, first Chief of the Forest Service.

HUMAN RESOURCE PROGRAMS

The goal of the Human Resource Programs is to provide job opportunities and training for youths, the unemployed, underemployed, economically disadvantaged, and the elderly while carrying out high priority conservation work. During 1984, $64.2 million was transferred from the Department of Labor to operate two major programs: Job Corps and the Senior Community Service Employment Program. In addition, the Agency used $3.5 million of NFS funds to operate a Youth Conservation Corps program during the summer. Other programs administered by the Forest Service included the Volunteers in the National Forests and the Touch America Project. In addition, the Forest Service provided work opportunities for participants in State and local employment programs.

These programs provided employment and skills training to 65,354 persons during the year. Major accomplishments, valued at $82.9 million, were campground and trail construction, tree planting, fence building, firefighting, timber stand improvement, clerical support, and construction of office buildings, warehouses, and roads.

A Volunteer at the Pactola Ranger District office in Rapid City, South Dakota.

Volunteers in the National Forests

The volunteers program offers individuals from all walks of life the opportunity to donate their services to help manage the Nation's natural resources. This program continues to grow in popularity as people realize how they can personally help carry out natural resource programs.

This year, the volunteers program attracted 43,496 participants who contributed 1,784 person-years of work valued at approximately $ 23.4 million.

The Touch America Project (TAP) is a special volunteer program that gives youth between the ages of 14 and 17 a chance to gain job experience and environmental awareness while working on public lands. Private sector organizations sponsored over 7,000 youths through TAP in 1984.

Job Corps

The Job Corps program provides basic education and job training to disadvantaged youths between the ages of 16 and 22.

The Forest Service administers 18 Job Corps Civilian Conservation Centers under an interagency agreement with the Department of Labor. The main purpose of the centers is to enable graduates to find productive work, reenter school, or join the military. In 1984, 80 percent of those completing a stay with the Job Corps took one of these career steps.

A Senior Community Service Employee provides technical office skills.

Funding for the 9-month Job Corps program year was $43.1 million. The 7,250 youths who participated (54 percent minority and 10 percent women) accomplished $13.9 million worth of work through 2,899 person-years of on-the-job training.

Senior Community Service Employment Program

The Senior Community Service Employment Program is administered by the Forest Service through an interagency agreement with the Department of Labor. The program, authorized under Title V of the Older Americans Act, is designed to provide: 1) part-time employment and supplemental income to the low-income and disadvantaged elderly, 2) training and transition of participants to the regular labor market, and 3) community service to the public.

During the program year July 1, 1983, to June 30, 1984, 5,885 persons were employed. Of these, 21 percent were minorities and 33 percent were women. Thirteen percent of the participants were later placed in nonsubsidized jobs.

The enrollees accomplished 2,717 person-years of work valued at $31.3 million, returning $1.48 for each appropriated dollar. Funding for seniors during this program year was $21.1 million.

Youth Conservation Corps

The Youth Conservation Corps (YCC) is a summer employment program for young men and women aged 15 through 18. YCC enrollees earn and learn while doing conservation work on National Forest System land. The Forest Service operated a $3.5 million program this year.

The 2,164 youths that participated (16 percent minorities and 47 percent women) accomplished $4.8 million worth of work, returning $1.37 on each dollar invested.

Hosted Programs

The Forest Service provides conservation work opportunities for participants in programs administered primarily by State and local governments. Hosted programs include the Job Training Partnership Act, college work study, vocational work study, and work incentive. During 1984, 6,559 people participated in these programs, accomplishing 744 person-years of work worth $9.5 million.

•NATIONAL•FOREST•SYSTEM•

INTRODUCTION

The Forest Service manages and protects 191 million acres of National Forest System (NFS) land, 87 percent of which are in the Western United States.

The natural resources on these lands are among the Nation's greatest assests. How these resources are used and protected affects the economic, environmental, and social well-being of every citizen. Renewable resources such as recreation, forage, wood, wilderness, wildlife, fish, and water are products of the National Forests. Nonrenewable resources such as oil, gas, coal, and hardrock minerals are also produced.

Funded targets for 1984 have been met or exceeded in most cases. Tables 10 through 13 show the percentages of accomplishments and funding. Discussions of key activities, outputs, and other program information follow.

LAND MANAGEMENT PLANNING

The Planning Process

The Forest Service uses the land management planning process to determine the best use of all resources found on NFS land, including recreation, fish and wildlife habitat, water, timber, minerals, range, and wilderness. The process not only helps managers determine the best use of these resources, but also to schedule their use so that adequate supplies are always available.

As part of the planning process, regional guides were developed by each of the nine Forest Service Regions. With direction from these guides, an interdisciplinary team from each National Forest unit will prepare a land and resource management plan. This document, called the forest plan, describes how all resources on that Forest are to be managed, how much management will cost, and what the environmental impact of these activities will be. As specified in the National Forest Management Act of 1976, plans are to be completed by September 30, 1985.

Land management planning is a continuing process that responds to changes in the demands made upon the supply of renewable resources. The Forest Service, in cooperation with the public, will update and amend forest plans as needed to insure that adequate resources will be available for future generations.

Regulations that guide plan development were revised in 1983 in response to a court decision that found the 1979 Roadless Area Review and Evaluation (RARE II) environmental statement and associated procedures to be inadequate under the National Environmental Policy Act (NEPA). This latest revision mandates that the forest planning process reevaluate areas that remain essentially roadless and undeveloped and have not been designated by law as wilderness or for nonwilderness uses. This revision became effective October 7, 1983.

Status of Regional Guides

All nine final regional guides and environmental impact statements required by NFMA have been published.

The primary purpose of these guides is to provide national and regional direction in the development of forest plans. Included in the guides are major issues and management concerns of the Region as well as tentative resource objectives, recommended by RPA, for each National Forest. While the guide insures that a consistent approach to National Forest planning is followed throughout the Region, it allows the individual Forests considerable latitude in formulating forest plans. The guide also helps coordinate NFS programs in the Regions with programs in State and Private Forestry and Research.

Status of Forest Plans

Forest plans for the 121 National Forest units are in various stages of development. Most were delayed to accommodate reevaluation of roadless and undeveloped areas. Twenty draft and nine final forest plans have been filed with the Environmental Protection Agency (EPA). Another 27 draft forest plans have been approved for publication.

Table 14 lists the draft and final forest plan EIS's filed with EPA by the Forest Service.

Wilderness Legislation

During the 98th Congress, substantial changes were made in the National Wilderness Preservation System on NFS lands. Wilderness acres increased to 32.1 million acres, a 6.8 million-acre increase. Wilderness legislation was passed for 20 States, and introduced but not enacted in 7 other States. In total, there were 65 wilderness bills before the 98th Congress.

The number of wildernesses has increased from 164 at the beginning of the 98th Congress to 327. In addition to these 163 new wildernesses, additions were made to 49 existing wildernesses.

It is important to note that a major portion of the RARE II roadless areas issue was resolved by enactment of this wilderness legislation. Of the 62 million acres inventoried in RARE II, 46 million acres were located outside Alaska in the lower 48 States. At the beginning of the 98th Congress, 4.5 million of the 46 million acres in these States had been designated wilderness, and 6.1 million acres had been released for uses other than wilderness. The 98th Congress released an additional 13.8 million acres in these States. This leaves only 17.3 million acres unresolved from RARE II. Most of these acres (13.3 million) are in Nevada, Idaho, and Montana.

After passage of the Alaska National Interest Lands Conservation Act (ANILCA) in 1980, only 4.4 million acres of the roadless areas in Alaska remain unresolved.

Marble Mountain Wilderness Area, Klamath National Forest, California.

Dragline coal mining in northern Wyoming.

These unresolved acres are on the Chugach National Forest and include the Nellie Juan-College Fiord Wilderness study and RARE II further planning.

Wild and Scenic Rivers

In 1984, the Forest Service recommended that 14 study rivers be added to the National Wild and Scenic River System. Congress designated four of these for inclusion in the System: the Tuolumne in California (83 miles), Illinois in Oregon (50.4 miles), Au Sable in Michigan (23 miles), and Verde in Arizona (40.5 miles). Eligibility studies were completed on four other rivers, and reports and environmental impact statements were sent to the Office of Management and Budget for review. Included are the North Fork Kern in California (60.7 miles), Manistee in Michigan (51 miles), Cache la Poudre in Colorado (83 miles), and Situk in Alaska (non-designation recommended). Five additional study reports nearing completion are on the Greenbrier in West Virginia (133 miles), Black Creek in Mississippi (19 miles), Red River in Kentucky (18.9 miles), Sipsey Fork in Alabama (32 miles), and the Allegheny River in Pennsylvania (128 miles).

The 98th Congress directed that these new studies be started: the North Umpqua River in Oregon, Horsepasture Creek in North Carolina, and Wildcat Brook in New Hampshire. The National Forests are also evaluating the wild and scenic river eligibility of rivers on The National Rivers Inventory (1980-National Park Service) that flow through NFS lands.

MINERALS

Energy-producing resources found beneath NFS lands are oil, natural gas, coal, geothermal steam, and uranium. Minerals of strategic importance beneath NFS lands include chronium, nickel, tungsten, and molybdenum. Gold, copper, zinc, silver, and phosphate are also found in significant amounts.

The primary role of the Forest Service in minerals management is to insure that the mineral resource is developed in a manner compatible with the management of other resources. The agency cooperates with the Department of the Interior, primarily the Bureau of Land Management, which is responsible for administering subsurface energy and mineral resources on all Federal lands. In cases where exploration, development, and production of mineral resources will significantly affect the environment, the Forest Service is required to prepare environmental impact statements.

More than 27,300 mineral cases were processed in 1984, exceeding the 1984 RPA goal by 20 percent. These cases involve leasable, locatable, and common variety minerals. They include such activities as processing new lease applications, completing validity examinations, processing prospecting permits, administering operating plans, and working on reserved and outstanding rights.

Even though more minerals cases were submitted than were anticipated, the number of cases remaining unprocessed at the end of the year decreased from 4,844 in 1983 to an estimated 2,805 in 1984.

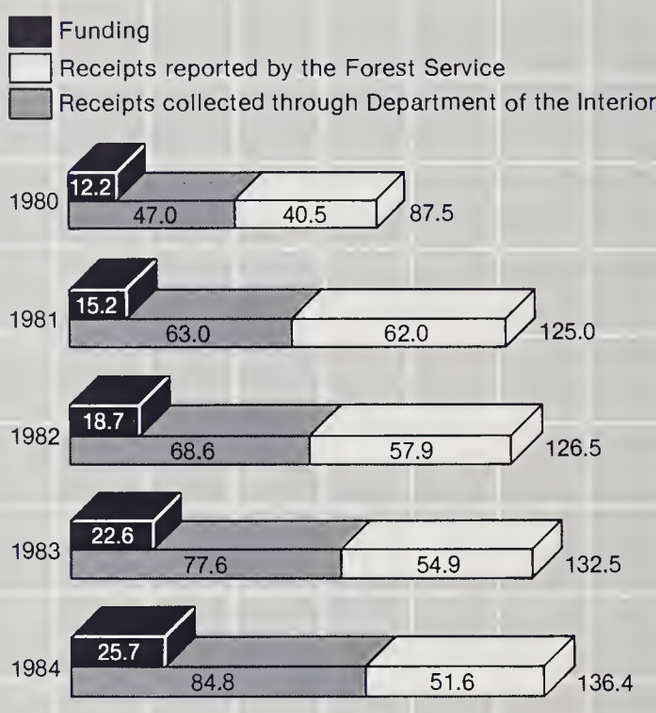
Of the unprocessed cases, there were 215 in wilderness study areas, 506 in RARE II recommended wilderness areas, and 674 in RARE II further planning areas. In response to congressional direction in the 1984 Appropriations Act, none of the applications in these areas were processed.

The number of cases processed exceeded the 1984 funded program by 34 percent. This increase in mineral activity on NFS lands is the result of efforts to meet the Nation's growing mineral needs while reducing dependence on uncertain foreign supply sources.

The tasks of processing applications and administering operating plans became more complex in 1984. Administrative activities involve protecting renewable resources, transportation planning, and monitoring land reclamation. Increased administration—more expensive than processing applications—has been a key factor in the nearly 25 percent increase over 1983 in the per case cost of minerals management.

In 1984, receipts from rents, royalties, sales, and bonus bids for minerals totaled an estimated $136.4 million (figure 6). This figure was similar to last year's in constant dollar terms, but was slightly higher in actual dollars. This increase may be due to many factors, including increased mineral production and higher price levels.

Figure 6
Minerals—Funding and Receipts[1]
(Million Dollars)



[1]See table 3, footnote 5

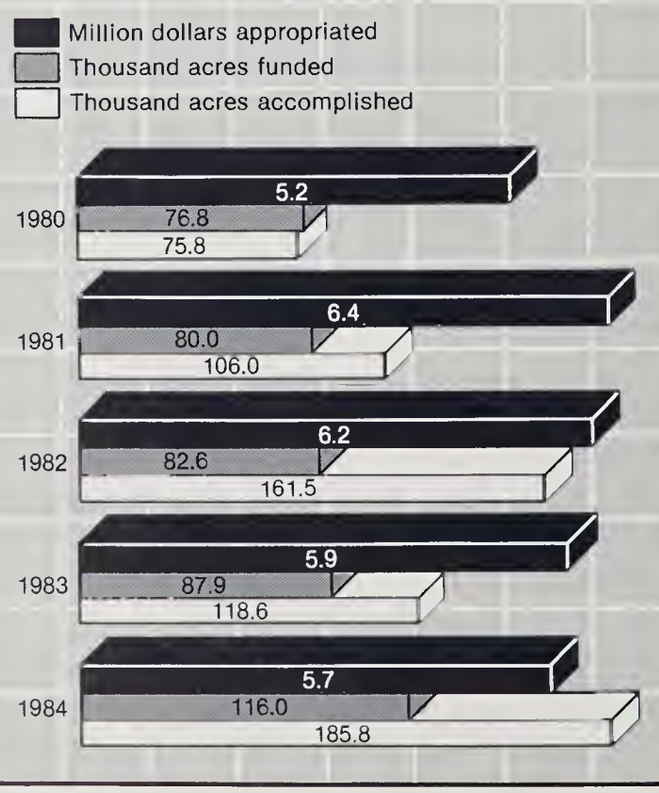
LANDS

Land Exchange Program

Land exchanges are carried out primarily to reduce the cost or improve the effectiveness of resource management. In 1984, 185,849 acres of non-Federal land were acquired in exchange for 114,042 acres of NFS land (figure 7). This was 60 percent more than the amount of lands scheduled for exchange in the 1984 funded program. The increase was due to simplified administrative procedures and the large size of some exchanges. For the same reasons, actual unit costs of $31 per non-Federal acre acquired were 54 percent lower than planned costs.

These exchanges consolidated NFS lands, making it more efficient to manage and administer various resource programs. National Forest property lines were reduced by more than 1,800 miles. This will mean a savings of $10 million in future landline location costs, greatly exceeding the $5.7 million cost of the exchange work. Additional savings will result from fewer trespass cases, fewer special-use permits, and fewer rights-of-way cases.

Figure 7
Land Exchange—Funding and Accomplishment



Most of the non-Federal land acquired through land exchanges is within classified Wilderness, National Recreation Areas, Wild and Scenic Rivers, National Trails, and other congressionally designated areas. In each case, it proved more cost-effective to exchange lands than to purchase them. Non-Federal landowners paid $641,814 in cash equalization payments and the United States paid $2,589,747. The total amount ($3,231,561) was 2 percent of the appraised value, well within the 25 percent allowed by the Federal Land Policy and Management Act.

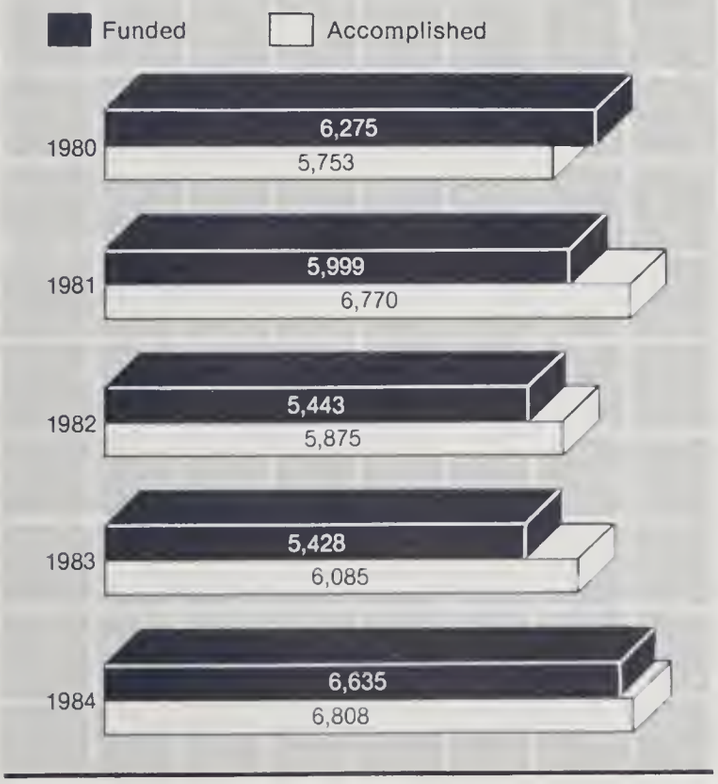
Landline Location

Landlines—the legal boundaries between NFS lands and other ownerships—must be identified so that activities (e.g., timber sales) can be carried out without risk of trespass. The proper location of Forest Service property lines is essential to managing and protecting NFS lands from encroachment.

The RPA goal is to locate, mark, and post all NFS property boundaries by the year 2020. Of the total 272,409 miles of property boundary, 69,401 miles were completed by the end of 1984.

In 1984, $29.2 million was appropriated to locate about 6,635 miles of property boundaries. A total of 6,808 miles was located, 2 percent more than the target (figure 8). The Forest Service was able to exceed targets in 1984 primarily because of efficiencies gained through new technologies and procedures.

Figure 8
Landline Location
(Miles)



Small Tracts Act Cases

The Small Tracts Act of 1983 authorizes the Secretary of Agriculture to sell or exchange small parcels of NFS land. Included are unmanageable parcels of various sizes and shapes located between mineral patents, and small parcels innocently occupied (e.g., where a private home has been inadvertently built over an NFS property line). Since February 1984, when regulations to implement the act became effective, 60 title claims cases, most involving encroachments, have been resolved. Sixty-five acres of Federal land have been disposed of, 30 acres of non-Federal land have been acquired, and $55,000 has been paid to the United States.

Land Purchase and Donations

The Forest Service purchased 20,577 acres with money provided by the Land and Water Conservation Fund and Receipts Acts appropriations. In addition, 25 landowners donated 1,409 acres of mineral interests plus about 795 acres of surface land rights.

PROTECTION

Fire Management

After experiencing two very wet years in the West accompanied by an unusually small number of wildfires, the 1984 wildfire season seemed extremely active by comparison. Southern California experienced unseasonable wildfire activity in February. In April, two firefighters lost their lives while suppressing a wildfire on the Ouachita National Forest in Arkansas. In late June, wildfire activity shifted west to National Forests in Arizona, and in July, the Toiyabe National Forest in western Nevada experienced a series of large wildfires.

In August, Montana, Idaho, Washington, Oregon, and northern California experienced major lightning activity that fully utilized smokejumper capability. The historic 100,000th smokejumper fire jump occured on August 17 when smokejumper John Purlee jumped on the Fly Hill Fire, Clearwater National Forest, Idaho.

During the last week of August, Montana experienced a rash of lightning fires followed by several days of strong winds. This combination of weather factors resulted in 17 large wildfires and a major interagency suppression effort. During this same period, the Forest Service monitored 65 lightning-caused prescribed fires in wilderness areas where resources and property were not threatened.

PERIOD	NO. OF DETECTED WILDFIRES			ACRES BURNED
	Lightning-caused	Person-caused	Total	
1979-83 (5-yr avg.)	4,559	5,945	10,504	203,037
1984	5,410	4,527	9,937	129,829

Fuel Management

The purpose of fuels management is to: 1) reduce the volume of fuels and thus minimize the potential for large, destructive wildfires, and 2) support land and resource management objectives. Activities include surveying fuel hazards, analyzing alternatives for treating these hazards, and actual treatment.

Fuel management targets were exceeded by more than 75 percent due to favorable prescribed burning conditions and the availability of fire suppression crews to conduct prescribed burning.

Insects and Diseases

Resource damage caused by pests can be effectively reduced by applying pest control principles to resource management activities. Forest plans now being prepared will project potential forest pest outbreaks, estimate damage, and plan appropriate management actions.

Major NFS pest management accomplishments beyond those realized through regular forest management activities are:

- Detection and evaluation.....145 million acres
- Prevention/suppression.....225 thousand acres

A more detailed discussion of forest pest management is included on pages 33 and 34.

Law Enforcement

The Forest Service is responsible for protecting natural resources, Federal property, and employees on the National Forests. Major law enforcement activities in 1984 involved efforts to prevent and investigate timber thefts and illegal removal of fuelwood. More timber thefts were reported this year than in 1982 or 1983.

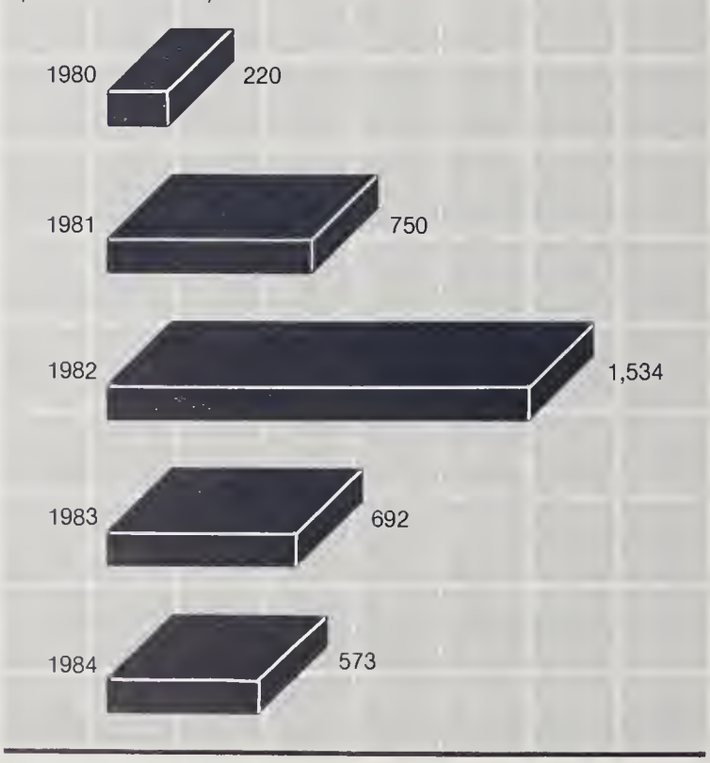
There were also more investigations of theft of artifacts and destruction of archaeological sites. A major 2-year investigation in the Southwest led to the felony indictments of more than 30 individuals. These investigations and related prosecutions seem to play a major role in reducing destructive activity on these sites.

The Forest Service continued its long-term commitment to standardized, high-quality law enforcement training at the Federal Law Enforcement Training Center (FLETC) this year. The Forest Service cooperates with the Department of Treasury in many activities at the Center. For example, specialized interagency courses in investigation of incendiary fires and vandalism of archaeological sites were presented to 22 agencies in 1984. In addition, a total of 126 Forest Service employees graduated from the "Criminal Investigation" and "Law Enforcement for Land Management Agencies" courses. The Forest Service also conducted a special law enforcement course for line managers at FLETC.

During 1984, the Forest Service worked with the Drug Enforcement Administration, Department of Justice, and State and local law enforcement agencies to identify and eradicate cultivated Cannabis on the National Forests. Marijuana is produced by drying portions of the Cannabis plant. Of greatest concern is the risk to National Forest visitors, contractors, and Forest Service employees who may be assaulted when they encounter those guarding and tending these lucrative crops. Substantial progress has been made to eradicate more of the estimated crop and to reduce the acreage on which public use of the National Forests is constrained by this illicit activity (figure 9).

Data for 1984 indicates a slight reduction in the number of Cannabis operations compared to 1983. Also, the

Figure 9
Acres Significantly Impacted by Cannabis Cultivation
(Thousand Acres)



average number of plants in these operations was reduced to historically low levels as a result of effective detection and eradication efforts in 1983.

The Cooperative Law Enforcement Program is designed to compensate severely impacted State and local law enforcement agencies for extraordinary expenses in protecting visitors and their property on the National Forests. Reimbursements are concentrated where large numbers of visitors must receive their principal protection from relatively small, often under-staffed, local law enforcement agencies. During 1984, the Forest Service had agreements with 364 State and local law enforcement agencies. In recent years, violent crimes and theft of visitor property have been substantially reduced in areas where this program has increased law enforcement presence.

TIMBER

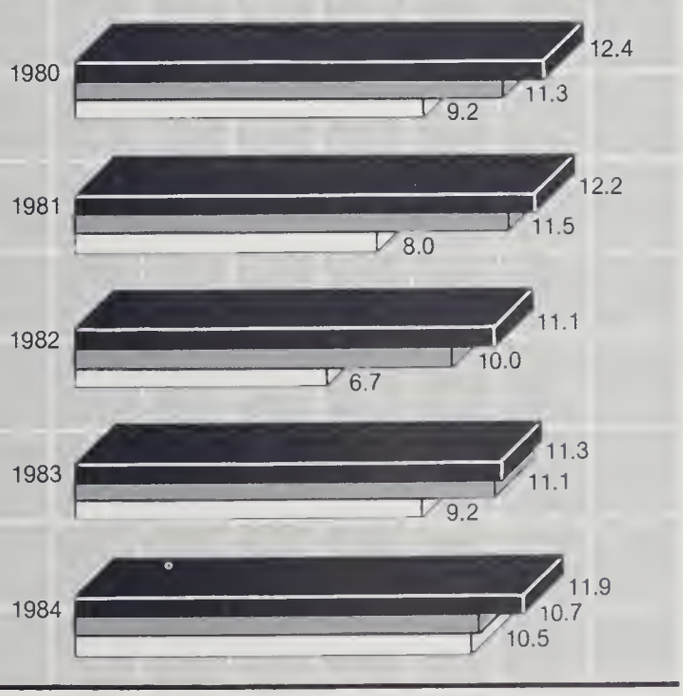
Program Overview

Timber on National Forest System lands is managed to produce a continuous supply of wood products to serve America's demands. The main products of the National Forest timber resource include logs for lumber and plywood, wood fiber for paper, fuelwood, posts, poles, and Christmas trees.

Figure 10

Timber Offered, Sold, and Harvested

(Billion Board Feet)



National Forests have the largest supply of standing sawtimber in the Nation, estimated at nearly 1.1 trillion board feet. This is about 41 percent of the national total; non-industrial private forest lands account for 33 percent of the total, private industry has 15 percent, and other public lands have 11 percent.

National Forests provide about 20 percent of the total sawtimber harvested in the United States annually. This compares to about 40 percent from private forest lands, 30 percent from lands owned by the forest industry, and 10 percent from other public lands.

Accomplishments for the three major timber management programs in relation to 1984 targets were 102 percent for timber offered for sale, 111 percent for reforestation, and 112 percent for timber stand improvement (TSI).

Accomplishments in comparison with the long-term RPA Timber Management goals were: 98 percent for timber offered, 80 percent for reforestation, and 89 percent for timber stand improvment.

The timber industry continues to recover from the near-depression economic conditions that began in 1980 and continued through mid-1983. These conditions resulted in an increased level of bankruptcy filings, defaulted timber sales and volume under contract, all of which required extraordinary steps to be taken by both the Forest Service and Congress.

Demand in 1984

Demand for timber products in the United States rose sharply from 1983 levels and continued to be moderately strong through the first half of 1984 before leveling off somewhat in the third quarter. New housing construction, accounting for more than a third of the total annual consumption of softwood lumber and plywood, surged ahead during the first quarter, then declined in July and August. Despite these declines, the seasonally adjusted annual rate for 1984 was slightly higher than that of 1983. The somewhat smaller average building rates after the first quarter can be attributed to persistently high mortgage interest rates.

In contrast to housing, nonresidential construction grew fairly rapidly in 1984. The seasonally adjusted annual rate of new nonresidential construction in August was more than 17 percent above the total for all of 1983. Unless last quarter rates are particularly weak, total construction for all of 1984 will be significantly above the total for 1983.

The United States is the world's leading importer of timber products, chiefly lumber, pulp, and paper from Canada, and veneer and plywood from southeast Asia. Based on the first 7 months of 1984, softwood lumber imports are expected to be up 5 percent, hardwood plywood imports are expected to be up 7 percent, and pulpwood imports are expected to be up 34 percent over 1983.

Exports are expected to be down 10 percent and 12 percent for softwood lumber and pulpwood respectively, and up 9 percent and 10 percent for hardwood lumber and softwood logs respectively. Declines in shipments of softwood logs to Japan and Korea were more than offset by a large increase in shipments to the People's Republic of China.

In summary, market trends for most timber products have kept consumption and production at higher levels in 1984 than in 1983.

Timber Sale Preparation, Offer, and Harvest

In order to be responsive to market demands now and in the future, Congress provided the Forest Service with funds to prepare and offer 11.7 billion board feet of timber in 1984. A total of 11.9 billion board feet were prepared and offered and 10.7 billion board feet were sold (figures 10 and 11). The value of timber sold was $699 million. This compares to 1983 sales of 11.1 billion board feet that sold for $774 million.

The average bid for timber in 1984 was slightly under $66 per thousand board feet. This compares with $70 in 1983, $61 in 1982, and $154 in 1981.

There are many reasons for the reductions in timber sold and average bid: high industry inventory carry-over, lower priced Canadian lumber on the market, new timber sale procedures introduced in 1983 that make it more costly for purchasers to hold large volumes of timber under contract, and anticipated legislative relief from older, high-priced contracts.

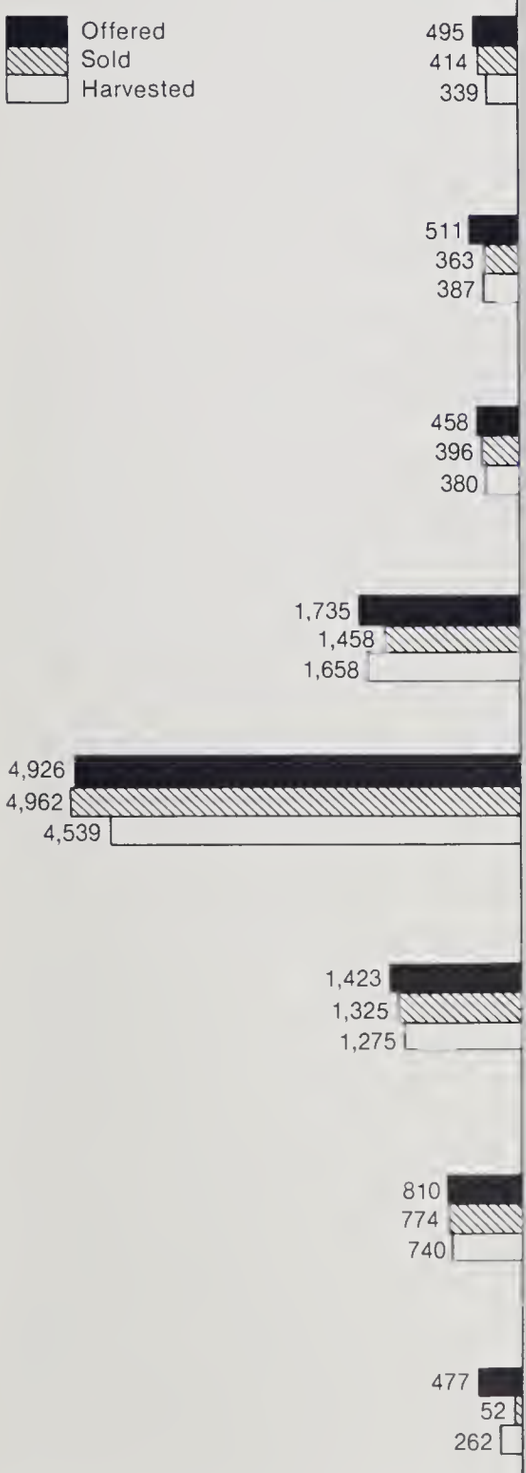
As in 1983, sales were small in volume and contract periods were short in order to give the industry opportunities to respond to current market situations. The cost per thousand board feet to prepare and administer timber sales did not increase between 1983 and 1984. In 1984, harvest volume totaled 10.5 billion board feet, compared to 9.2 billion board feet in 1983. Value of timber harvested was $760 million in 1984, compared to $650 million in 1983.

Uncut volume under contract increased slightly to 37.9 billion board feet in 1984 (figure 12), compared to 37.8 billion board feet in 1983. In December 1983, the Forest Service implemented a 5-year contract extension program. Sales scheduled to expire in 1984 were extended and added to the volume under contract. The value of this 37.9 billion board feet is estimated to be about $7 billion at current market rates.

Readers will note (table 26) that the volume under contract in 1984 does not equal (volume under contract in 1983 + volume sold in 1984) less (volume harvested in 1984). The original volumes sold may differ from volumes harvested because of volume adjustments during sale life and variation in volume estimates. This year's report of volume sold and harvested is based on data

A logging truck carrying timber from the Willamette National Forest, Oregon.

Figure 11
Timber Offered, Sold and Harvested
(Million Board Feet)



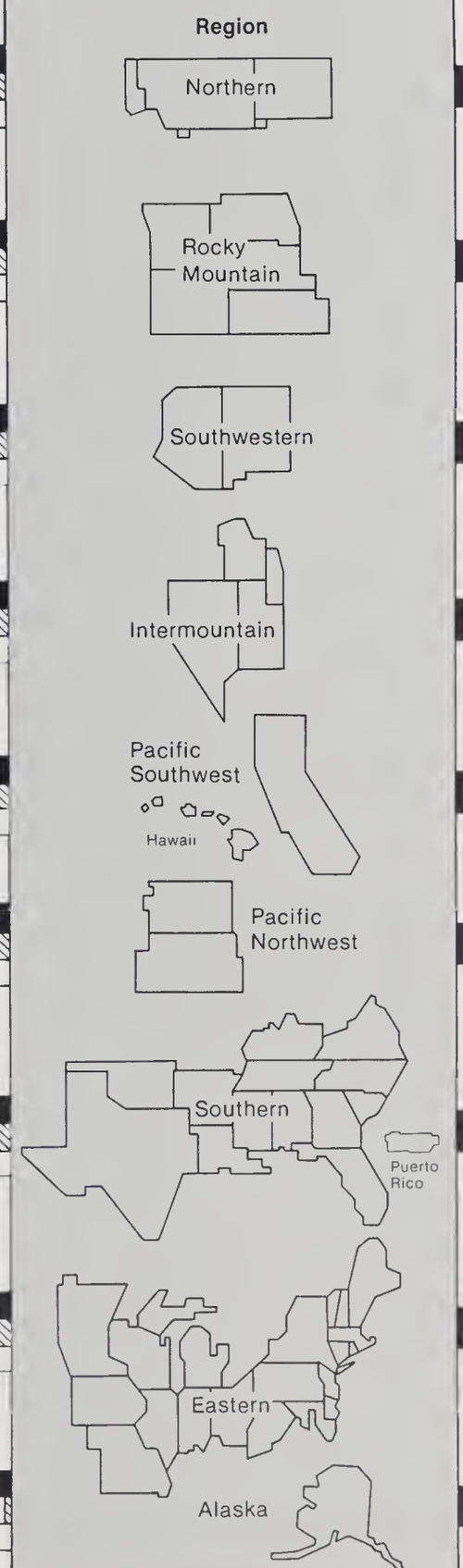
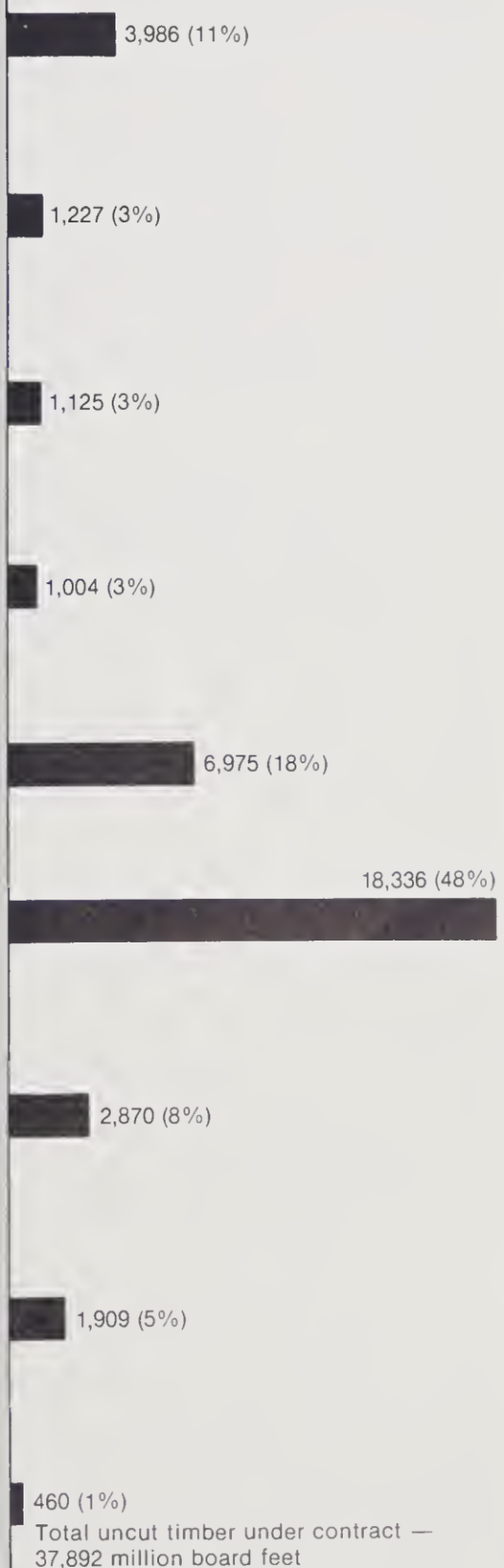


Figure 12
Uncut Timber Volume Under Contract
(Million Board Feet)



Total uncut timber under contract — 37,892 million board feet

from the Service-wide Timber Statement of Account. Therefore, volume under contract now includes sales conditionally extended under the multi-sale extension plan as well as volume from unresolved defaulted sales. These variables were not included in the 1983 report. Long-term sales in Regions 3, 4, 9, and 10 are not included in the volume sold, but are credited on harvest as it occurs. In addition, status of some sales remains unresolved due to Title 7 bankruptcy proceedings.

In October 1984, Congress passed the Federal Timber Contract Payment Modification Act. This act provides an opportunity for many companies that purchased Federal timber before January 1, 1982, to turn back contracts upon payment of a buy-out charge. The original contract period had to have been 10 years or less, and must still be in effect both on June 1, 1984, and on the date the company applies for buy-out. The Forest Service anticipates that this act will significantly reduce the volume of timber now under contract.

Timber Sale Cost and Value Comparisons

Recent congressional and public interest in the Forest Service timber sales program has centered on concerns that the cost of selling some timber exceeds the monetary value of the timber. Table 25 compares the cost of the program to the value of 1) timber and miscellaneous products sold and 2) some outputs associated with this volume. In five Regions, the selling value of timber and miscellaneous products alone is above the estimated cost. When considered along with the value of selected outputs, all Regions yield positive returns. Nationally, this value exceeds the cost by 220 percent.

The table does not present a complete picture of the economics of the timber sale program. Instead, it is a snapshot in time of an ongoing and complex process. The Forest Service will typically begin planning a timber sale 5 to 7 years before it is offered. Following the sale, harvesting will typically last 3 years and sometimes much longer. After harvest, reforestation and sale area improvements may take another 5 years. In 1984, approximately 550,000 sales were sold; there was a similar number in various stages of pre-sale preparation, and a similar number in various stages of post-sale activities. The costs shown in table 25 reflect activities in 1984 in all of these sales at different stages of the sale cycle. The value, on the other hand, relates only to products sold and some associated outputs in 1984.

The table has no entries for the enduring asset values created by the timber sale program. The primary example is the road network created to provide access to harvest areas. This network will also provide easier and cheaper access to future harvest areas; facilitate fire, disease, and insect control efforts; and create additional opportunities for various types of dispersed recreation. As another example, a portion of sale proceeds are used for reforestation, which creates a growing asset value for future generations. Because of their magnitude, the road expenses are shown separately, but all other expenses are simply included in costs.

Shown in table 25 are some of the multiple use outputs that are enhanced or supported by the timber sale program. The outputs shown are wildlife and fish user days, recreation visitor days, range forage, and free-use fuelwood, all of which can be reasonably estimated. There are, however, multiple use benefits supported by the timber sale program that cannot be easily quantified. For example, in harvests designed to regenerate aspen stands in the Rocky Mountains and the Lake States, the visual qualities and wildlife values of these stands are difficult to quantify. Similarly, a sale may be conducted in a high-use recreation area to create a roadside view or improve public safety. Other sales are sold to improve and protect healthy stands of timber, or to encourage use of damaged, low-value timber. The more dead or damaged trees there are in a sale, the more it costs to prepare, and the less the timber is worth.

HOW VALUES ARE CALCULATED

Value of Timber Products Sold

The value of timber products sold refers to the amount of money the Forest Service expects to receive from the timber sale. It is based on the bid rates for timber at the time the contract is signed. The timber value has purchaser credit—the value of permanent roads built by purchasers—removed. Nationally, the total value sold and harvested is an aggregate of 500,000 sales, involving 18 types of forest products, and 70 tree species.

Value of Timber Products Harvested

The value of timber products harvested is the adjusted amount paid for the timber at the time of harvest. This value is the basis of the Forest Service monthly billing to the purchaser. The value harvested also has the purchaser credit removed. The value of timber harvested from a sale may differ from the bid value because of price adjustment provisions in the contract, and differences between estimated and actual volumes.

Money Received from Timber Products

Money that the Forest Service receives from the sale of timber products varies from reported harvest value. This is mostly because the Forest Service does not actually receive this money until 45 days or more after the billing. Until then, the selling value of the timber is covered by performance payment guarantee, bonds, or advance cash deposits.

Nevertheless, these trees must be removed to protect adjoining lands from the threat of insect outbreaks or fires. This was the case in the sale of many overmature, insect- and disease-infected lodgepole, spruce, and ponderosa pine stands in the Western Regions.

Also not included in the table is a measure of the economic support that the timber sale program provides to dependent industries and communities throughout the country. The magnitude of this benefit varies considerably from one Region to another, and is most pronounced in the small communities in lightly populated areas of the West, Alaska, and in the Lake States.

Recognizing the importance of timber sales to these communities, Congress has enacted legislation authorizing special funding in areas where the timber-producing land base has been reduced. The Boundary Waters Canoe Area Wilderness Act and the Alaska National Interest Lands Conservation Act are examples of such legislation.

In response to recent Congressional direction, the Forest Service now has an effort underway to analyze different ways to account for the costs, revenues, and benefits of the timber sale program. Should changes be necessary, they will be reflected in subsequent annual reports.

Salvage Sale Program

Approximately 1.1 billion board feet of salvageable timber was sold in 1984. About 760 million board feet, or 69 percent, was sold under the salvage sale fund program. This program, authorized under the National Forest Management Act of 1976, allows the Forest Service to use money from salvage sales to cover the cost of preparing and administering the sale of insect-infested, dead, damaged, or down timber, including engineering work necessary for roads. Approximately 15 percent (116 million board feet) of the volume sold under the salvage sale fund program was sold to small timber operators with fewer than 25 employees. A major effort to salvage insect-infested timber is now underway in the National Forests in Texas and in the front range of Colorado.

Fuelwood and Other Miscellaneous Products

Fuelwood cutting in the National Forests continues to be very popular with the public. In 1983, a minimum charge of $10 per permit was established: 1) to provide consistency within Forest Service fuelwood programs, and 2) to be in step with sale practices of other public agencies and private forest landowners. Free fuelwood is still available in limited areas where supply significantly exceeds demand.

About 2.6 million cords of fuelwood were sold or given away in 1984 as compared to 3.4 million cords in 1983. In 1984, approximately 1.1 million cords of free fuelwood with a value of about $2.6 million were removed. About 1.5 million cords of fuelwood were sold in 1984 with a value of $5.7 million compared to 1.2 million cords with a value of $4.3 million sold in 1983.

Silvicultural Examinations

Data from silvicultural examinations are used to develop site-specific prescriptions to meet multiple use objectives. Timber resource inventories and silvicultural examinations provide essential timber data for the land management planning process. In 1984, the examination program was funded for 5.6 million acres, with 6.3 million acres actually examined. More acres were examined because contract bid prices were lower than anticipated.

Reforestation

More than 376,000 acres of National Forest land were reforested in 1984. Of this total, 181,000 acres were reforested using appropriated and Reforestation Trust Funds, while 195,000 acres were funded by money set aside from timber sales under the Knutson-Vandenberg Act (K-V) (tables 28 through 30, and figure 13).

Backlog reforestation, which Congress required the Forest Service to accomplish by the end of 1985, has been reduced from the original 3.1 million acres to 113,000 acres (figure 14). The Agency anticipates that all feasible acreage of reforestation backlog will be treated, on schedule, by the end of 1985. At the close of 1984, approximately 822,000 acres needed reforesting. This includes approximately 384,000 acres resulting from timber harvest, fires, insects, diseases, windstorms, and unsuccessful reforestation treatments during the past year.

An average of 85 percent of all reforestation treatments have successfully met stocking objectives over the last 5 years. In 1983 (the latest data available), success was 87 percent.

The average cost of all reforestation in 1984 was about $301 per acre (appropriated $246 and K-V $353). This year's cost was about 25 percent less than 1983 due to the advance site preparation work done under the Jobs Bill Program (table 28).

Timber Stand Improvement

Timber Stand Improvement (TSI) refers to several types of noncommercial stand treatments designed to improve stand growth or quality. The future useable yield of timber stands can be increased anywhere from 15 to 25 percent with treatments such as thinning overly dense

Figure 13
Reforestation
(Thousand Acres)

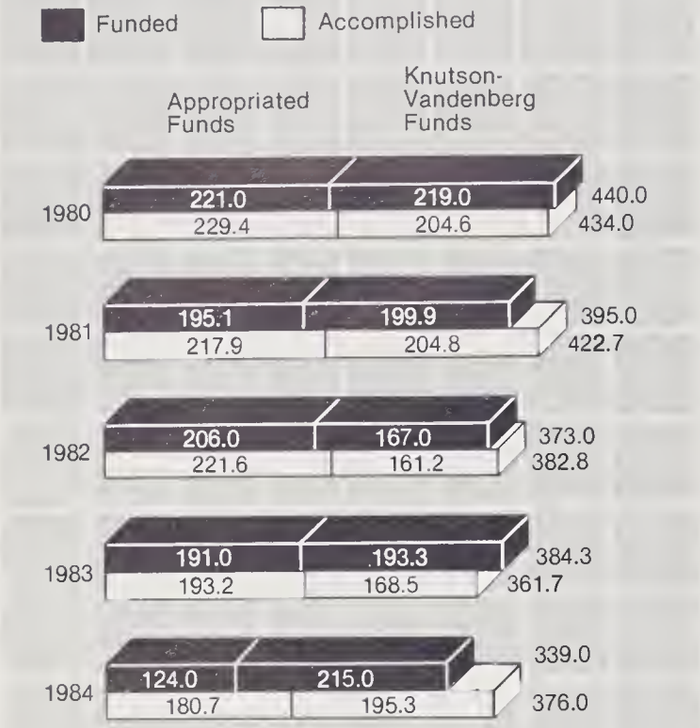
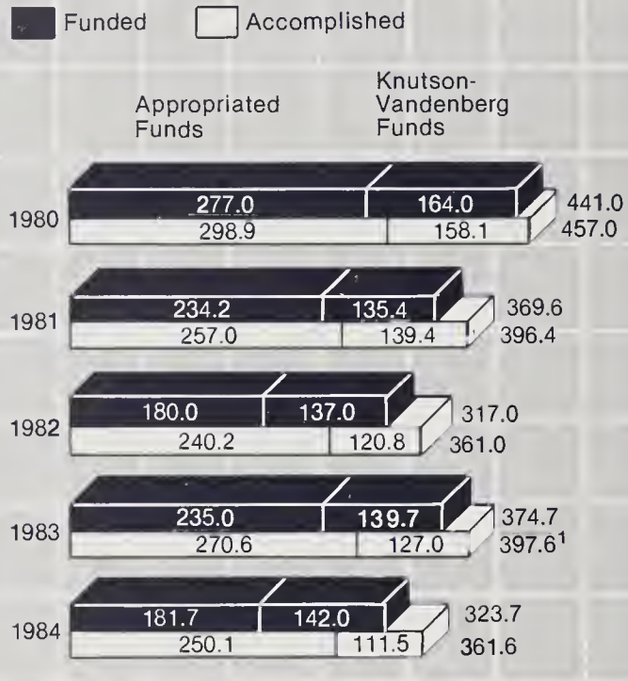
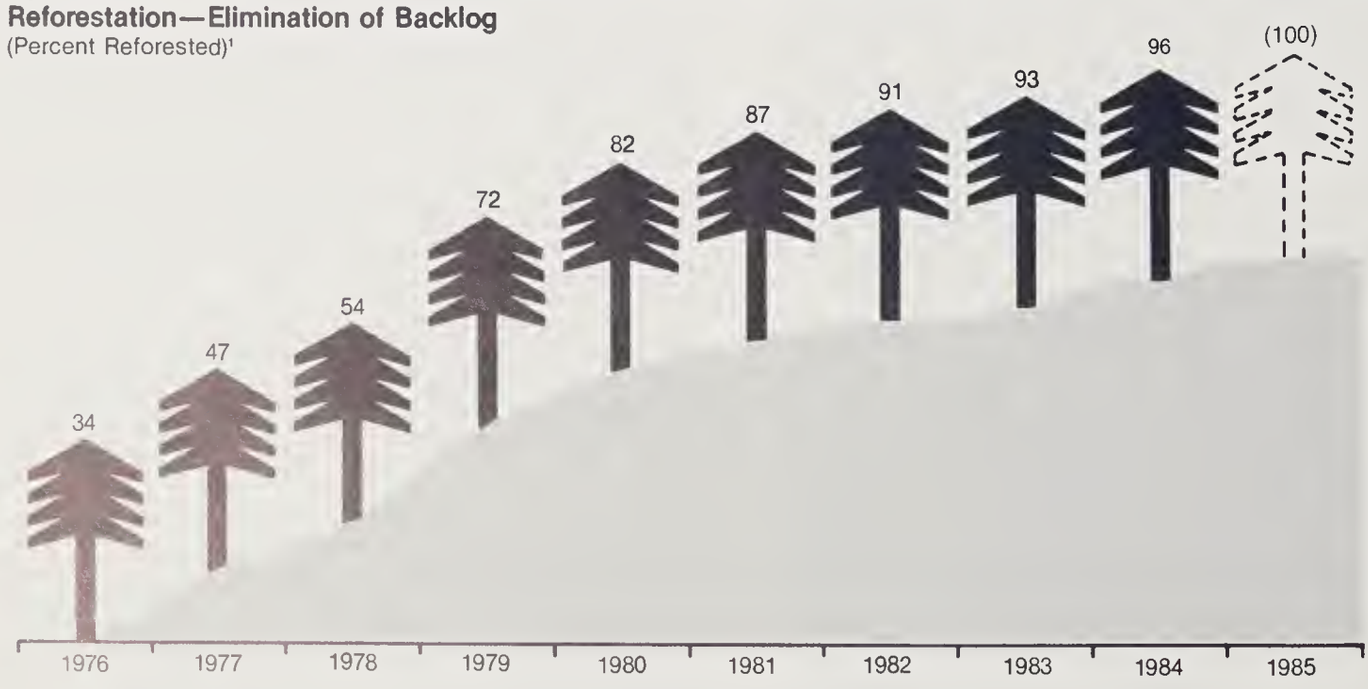


Figure 15
Timber Stand Improvement
(Thousand Acres)



[1]Does not include 158 acres accomplished with Federal Emergency Jobs Bill funds.

Figure 14
Reforestation—Elimination of Backlog
(Percent Reforested)[1]



[1]Includes acres actually treated, acres re-examined and found stocked, and acres classified to other non-timber uses, such as wilderness.

stands, eliminating competing shrubs or weed trees, or applying fertilizer to stimulate tree growth. As of October 1, 1984, TSI treatment was recommended on 1.5 million acres. This includes reforested stands that may need thinning to maintain a healthy, vigorous condition.

In 1984, a total of about 362,000 acres received TSI treatment. Various appropriated funds were used to treat 250,000 acres while K-V funds were used on an additional 112,000 acres (tables 31 through 35, and figure 15).

The average cost of all TSI in 1984 was about $133 per acre, a decrease of 6 percent from 1983. Costs were lower because of increased competition for fewer TSI contracts and because some of the advanced layout preparation was accomplished with Jobs Bill Funds in 1983.

Tables 28 through 35 provide detailed information on needs, accomplishments, and the certification of reforestation and TSI.

Forest Tree Improvement

Major gains were made in the tree improvement program during 1984. More than 5,000 superior tress were selected, 864 acres of progeny tests were planted to evaluate the genetic worth of the selections, and 128 seed orchards were established to produce improved tree seed. Over 32,000 pounds of seed were harvested in seed orchards—the largest harvest so far. Yields should be at least 10 percent greater on lands reforested with this genetically improved planting stock.

Inventory and Planning

Every year, the Forest Service inventories approximately 10 percent of NFS land to provide data for forest planning and national assessments. New techniques being used this year to reduce the costs of collecting data include the development of multi-resource inventories, use of LANDSAT imagery, and more efficient inventory designs.

New allowable sale quantities (volume of timber that can be sold per year) and supporting timber management activities are now being established for each of the National Forests. In the forest plans completed in 1984, allowable sale quantities are less than the previously calculated potential yields. These new quantities are lower because some timber-producing lands have been set aside for resource uses other than timber.

Although the new allowable sale quantities are lower than the previous allowable levels, they are slightly higher than the actual amounts of timber sold in past years. Plans for the remaining Forests should be completed by the end of 1985.

RECREATION

The Forest Service's goal in managing outdoor recreation on NFS lands is to provide for a variety of recreation experiences in a natural setting.

Recreation Use

More outdoor recreation occurs on NFS lands than on any other single landholding. According to the most recent data available, the National Forests and National Grasslands receive 41 percent of the total visitor days of use that take place on Federal lands (figure 16).

National Forest recreation includes a wide spectrum of activities ranging from camping at constructed facilities to backpacking in primitive settings (tables 36 and 37).

In 1984, 228 million recreation visitor days (RVD's) occurred on NFS lands. An RVD is 12 visitor hours, which may be calculated as continuous, intermittent, or simultaneous use by one or more persons. The 1984 use was 92 percent of the RPA goal (table 13). Of the total use, 10.2 million RVD's occurred in wilderness and primitive areas. The Western States, including Alaska, received 78 percent of this use. Since 1978, recreation use on NFS lands has risen by 4 percent.

Use at Forest Service operated facilities such as campgrounds, picnic areas, and swimming and boating sites was 82 million RVD's in 1984, up 1 percent from 1983. This amounted to one-quarter of total recreation use. Facilities operated by the private sector or other public agencies on NFS lands accommodated an additional 12 percent of total visitation.

Rafting is one of many recreation experiences available on National Forests.

Recreation use away from facilities in undeveloped forest areas accounted for 146 million RVD's or about two-thirds of total use, demonstrating the continued popularity of the more unconfined, unregulated recreation opportunities.

Receipts

The Forest Service is continuing with plans to increase fee receipts throughout the 1980s. In 1983, the median fee for a NFS campsite was $3.95. In 1984, the median increased to $4.07. In 1984, 75 more campgrounds were placed on the fee system, bringing the total to 1,996 or 48 percent of the total 4,132 family campgrounds on NFS land. Most Forest Service facilities at which fees can be charged under current legislation are now on the fee system.

Higher fees for use of Forest Service facilities generated $11.9 million in 1984 compared to $11.3 million in 1983. Fees for recreation special uses, derived primarily from ski areas and recreation residences, generated $15.6 million in 1984, down from $16.4 million in 1983. This reduction was due to a $2.8 million drop in receipts from recreation residences. User fees for recreation residences were lowered this year as directed by Congress in the 1984 Appropriations Bill.

Total recreation receipts in 1984 were $27.5 million, which is about 1 percent lower than 1983. However, since 1981 receipts have increased 42 percent. Expenditures for operation and management of recreation facilities and use were $100.9 million.

Trails

The trail system, used for resource management activities as well as for recreation, provides access to vast areas of NFS lands.

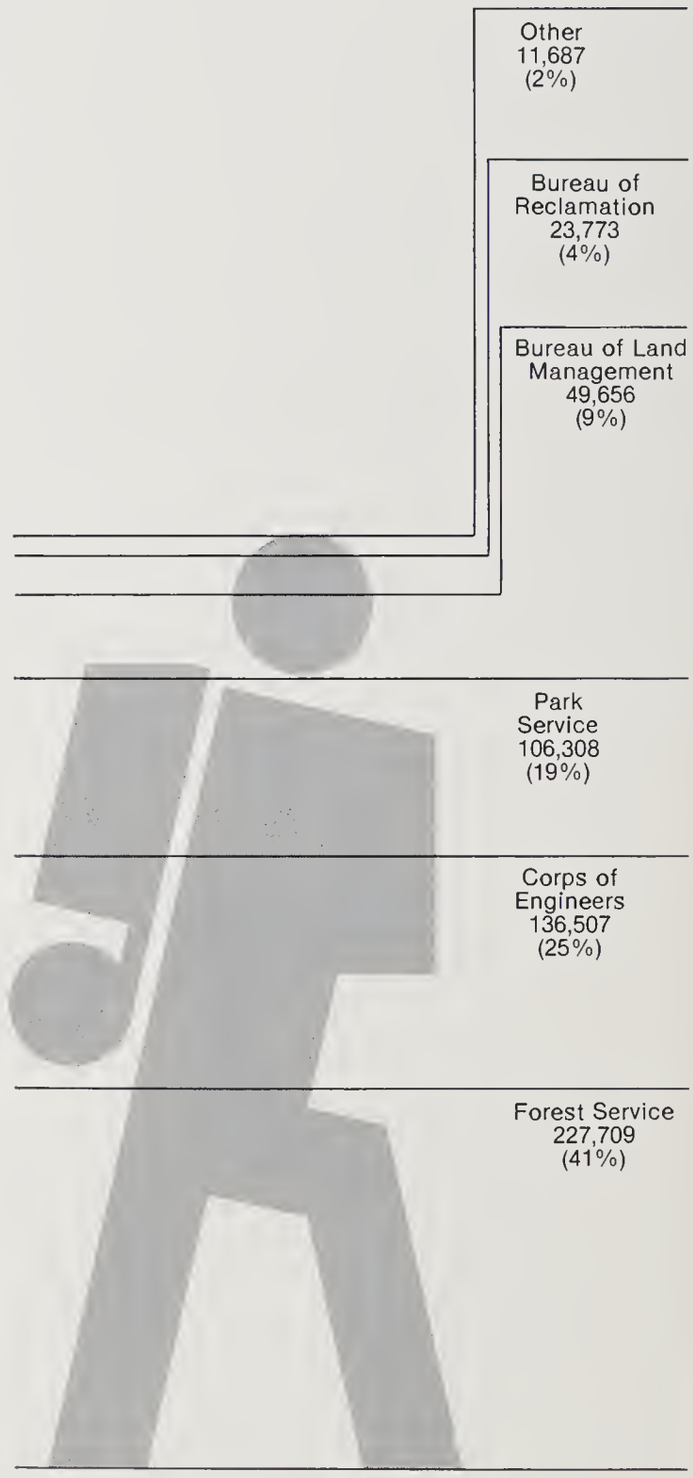
The 1984 RPA goal for trail construction and reconstruction was 2,238 miles. The 1984 funded target was 425 miles. Work was accomplished on 528 miles, 24 percent above the funded level, but only 24 percent of the RPA goal. In addition, employees in human resource programs constructed or reconstructed 344 miles; 175 of these miles were done by volunteers.

Recreation Facility Management

Historically, as National Forests have become more heavily used, recreation facilities have been built to protect the environment as well as to provide for visitors. These facilities include campgrounds, trailheads, boat ramps, picnic areas, and visitor information centers.

When a facility is operated and maintained at the standard service level, it is expected to last its designed project life. When operated at a less-than-standard

Figure 16
1983 Recreational Visitor Days by Federal Agency
(Thousand RVD's)



Total Recreation Visitor Days—555,640 Thousand

Figure 17
Recreation—Funding and Receipts
(Million Dollars)

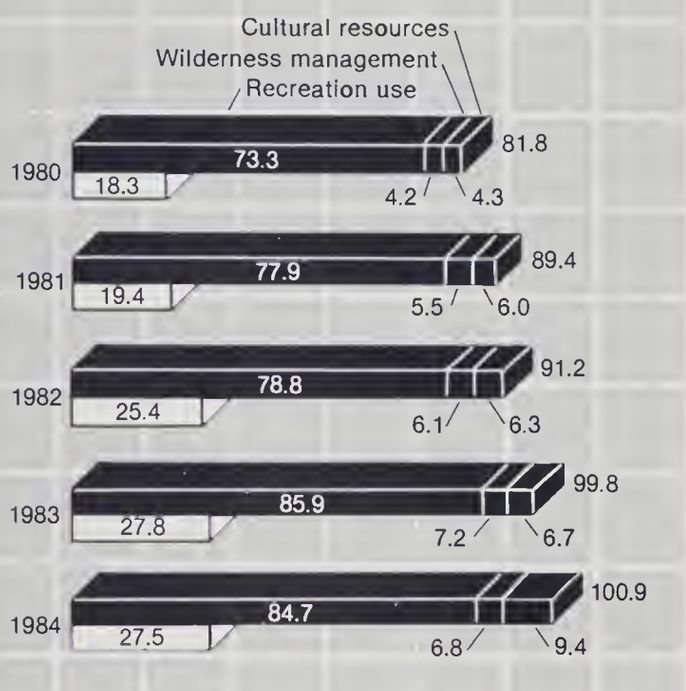
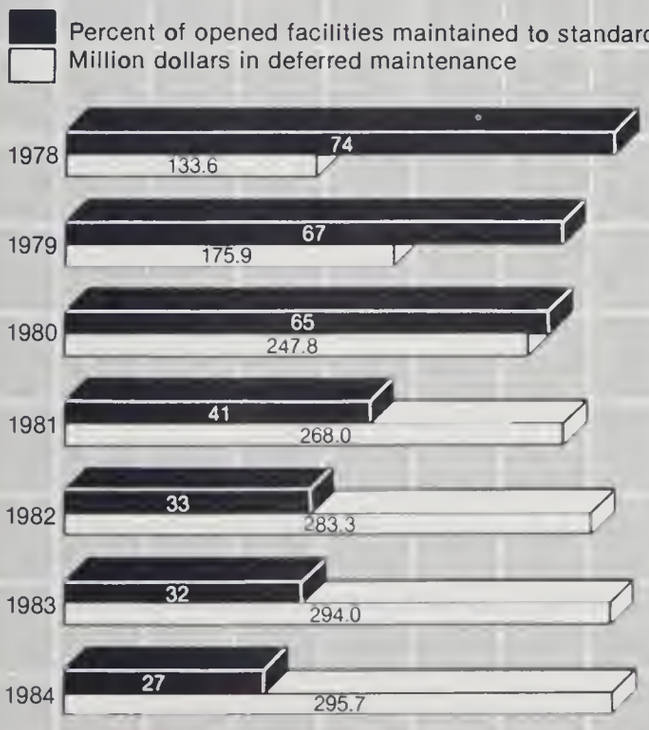


Figure 18
Recreation Facilities Operated at Standard Level of Maintenance Compared to Accumulating Deferred Maintenance



level, facilities usually depreciate faster and must be totally replaced sooner. In 1978, 74 percent of the opened facilities were managed at the standard level. Since then, in response to reduced budgets, it has been necessary to defer or reduce the standard of maintenance and cleanup and shorten the length of time some facilities are open for public use. In 1984, 27 percent of the facilities opened for public use were operated at standard service level, down slightly from 32 percent in 1983.

For several years, scheduled maintenance of Forest Service recreation facilities has been postponed. This deferred maintenance now totals $295.7 million, up slightly from 1983 (figure 18). This small increase in deferred maintenance reflects the positive impacts of the 1983 Jobs Bill, which provided $25 million for rehabilitating and reconstructing recreation facilities.

Recreation Site Construction

In 1984, Congress earmarked funds for three specific projects. Contracts were awarded for building the Begich-Boggs Visitor Center at Portage Glacier in Alaska, constructing additional campsites and access at the Kincaid Recreation Area in Louisiana, and designing a visitor center at Mount St. Helens National Volcanic Monument.

Cultural Resource Management

The Historic Preservation Act of 1966 directs the Forest Service to protect significant properties during activities that disturb the surface of the land, e.g., roadbuilding and campground construction. Archeological surveys must be done before project proposals can be approved. In 1984, survey sampling done on 1.5 million acres cleared the way for authorizing ground-disturbing activities on 2.1 million acres. These surveys identified 8,500 properties that had cultural or historical significance. Of those evaluated, 55 are now on the National Register of Historic Places, and an additional 650 were deemed eligible for listing.

Mount St. Helens National Volcanic Monument

In 1984, 333,000 people visited the temporary Mount St. Helens Visitor Center to see the interpretive displays, view the movie, and obtain further information. Approximately 488,000 visitors toured the National Volcanic Monument between mid-June and mid-October.

During 1984, significant progress was made in the capital investment program associated with the National Volcanic Monument. Seven existing campgrounds on principle road corridors were expanded to accommodate 465 more people at one time. The road network and internal roads of two additional campgrounds are now being rehabilitated. Five roadside viewpoint/interpretive

sites are also under contract and partially completed. In addition, a 2-mile trail to Norway Pass was built, affording outstanding views of Spirit Lake and the volcanic dome.

An interpretive talk on Windy Ridge at the Mount Saint Helens National Volcanic Monument.

WILDERNESS

The goal in managing wilderness is to provide for wilderness use, protect wilderness resources, and reduce conflicts between the uses and the values of wilderness. These values include solitude and naturalness, as well as ecological and geological features of scientific, educational, or historical value.

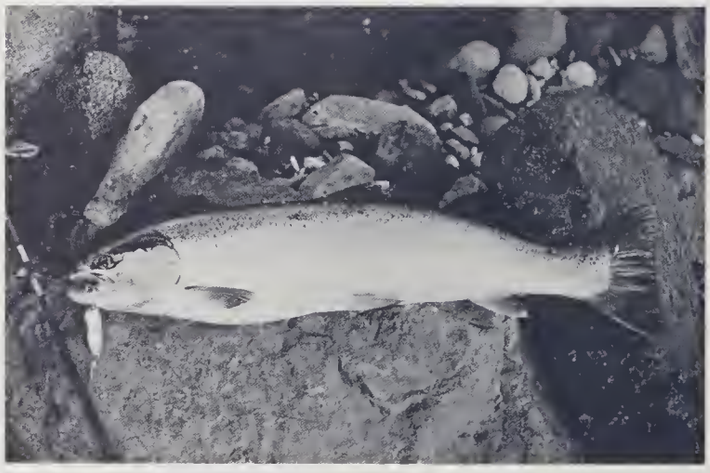
Recreational use of wilderness and primitive areas totaled 10.2 million RVD's, up from 1983 when use was 9.9 million RVD's. The amount of land in the Wilderness System has also increased. The 98th Congress added 163 wildernesses to the System, bringing the total number to 327. In addition, 49 existing wildernesses were enlarged. In all, there are approximately 32.1 million acres of wilderness on NFS lands.

WILDLIFE AND FISH

The Forest Service is reponsible for managing wildlife and fish habitat on NFS lands, while State wildlife and fish agencies are responsible for managing the animal populations on these lands. Wildlife and fish program plans developed with 41 States under the Sikes Act are part of the Forest planning process. Planning goals are based on public demand, costs, and net economic benefits.

Funding of the overall wildlife and fisheries program increased from $33.3 million in 1983 to $35.4 million in 1984. This increase was provided to support both resource coordination and threatened and endangered species management.

Prize steelhead trout taken from the Clearwater River, Clearwater National Forest, Idaho.



Wildlife and Fish Resource Use

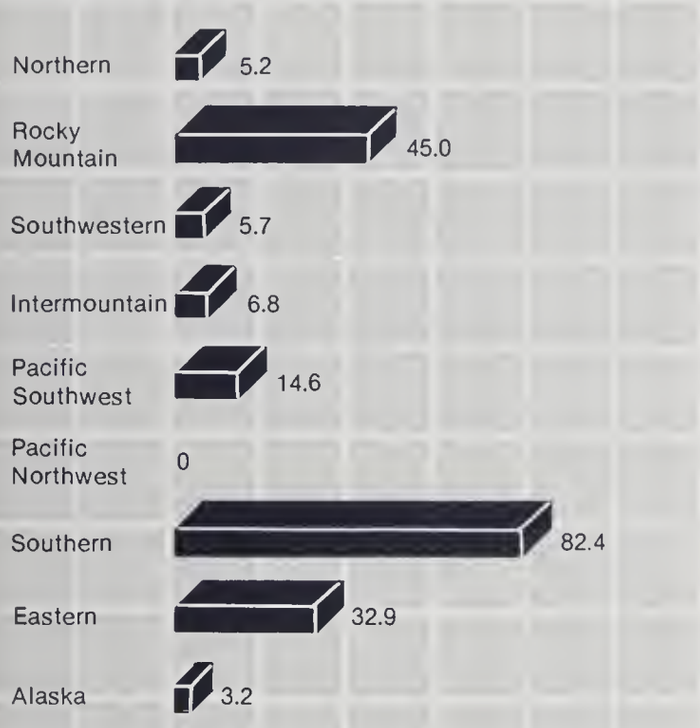
The wildlife and fish resource provided 32.1 million user days for hunters, fishermen, birdwatchers, and others. (These are included as RVD's in the recreation use figures in tables 36 and 37). These activities represent about 14 percent of all recreation on National Forests. In 1984, use was 2.6 percent less than in 1983. Using RPA planning information, the value of hunting provided, which is about half of the total wildlife and fish user days, is estimated at $348 million; the value of fishing provided is estimated at $299 million. In addition, about 118 million pounds of salmon were produced on NFS lands, with a direct commercial value of $134 million.

Wildlife and Fish Habitat Improvement

Habitats were improved in 1984 to maintain or increase current levels of wildlife and fish production in concert with other resource programs.

Figure 19

Appropriated Habitat Improvement
(Thousand Acres)



Radio-collared Rocky Mountain bighorn sheep released on the Cibola National Forest by the New Mexico Game and Fish Department.

The Forest Service improved 195,800 acres of habitat, which was 100 percent of the funded target and 34 percent of the 1984 RPA goal (figure 19). Appropriated funding for investments in wildlife and fish habitat improvement were reduced from $13.6 million in 1983 to $10.9 million in 1984.

Knutson-Vandenberg (K-V) funding from timber harvest receipts is a very important component of the wildlife and fish habitat improvement program. Over 170,000 acres of habitat were improved with funds from timber sale receipts. K-V funding was reduced to $5.1 million in 1984 from $8.4 million in 1983 because of lower timber harvest levels in 1982 and 1983.

Additional acres of habitat were improved because of wildlife input in the planning of other resource activities such as timber harvesting, stand improvement, and rangeland improvement.

Habitats were improved for wildlife and fish species in public demand such as deer, elk, grouse, wild turkey, waterfowl, trout, and bass. Results include the following:

- Salmon and steelhead habitat was improved in California, Oregon, Washington, and Alaska. Approximately $2 million was spent in these States on stream habitat improvements such as fish ladders, and lake fertilization for coho salmon in Alaska.

- The Departments of Agriculture and Interior entered into an agreement with Ducks Unlimited to develop wetland habitats on Federal lands and thus increase waterfowl production in the United States. Ducks Unlimited funded the first cooperative project this year on the Chippewa National Forest in Minnesota.

New computer models were developed this year to determine the cumulative effects of habitat changes over time and to determine viable wildlife populations. These models were added to the the Forest Service's Wildlife and Fish Habitat Relationship System. The system's habitat capability models were also expanded to include more species and areas.

Resource Coordination

Wildlife and fish habitat needs are considered in planning for resource programs such as timber and minerals. Timber management programs are important to help meet habitat improvement objectives for species such as bear, deer, elk, turkey, and squirrels. For example, timber sales are planned to improve elk habitat by harvesting in locations that will provide forage close to cover. Funding of resource coordination was sharply increased in 1984 to $12.6 million from $8.7 million in 1983.

Threatened, Endangered, and Sensitive Species Protection Management

In addition to ongoing programs to protect threatened, endangered and sensitive species, efforts were begun in 1984 to:

- Re-establish the peregrine falcon in currently unoccupied habitats in Minnesota and New Hampshire.
- Improve techniques for censusing and monitoring the red-cockaded woodpecker population.

The Forest Service continued to emphasize grizzly bear habitat management. The mapping of potential grizzly bear habitat was doubled to about 1 million acres in 1984. Cumulative-effects models were developed to assess the impacts of resource management activities on grizzly habitat.

Forest Service representatives were active in the national Interagency Grizzly Bear Committee founded in 1983 to coordinate the recovery of the grizzly. One of the ways the Forest Service hopes to prevent conflict between bears and humans is to inform backcountry users about proper conduct in grizzly habitat and provide them with information on the tenuous status of the grizzly population in the 48 States.

Funding for investments in habitat improvement for threatened and endangered species was increased $1.1 million, or 85 percent, in 1984 over the 1983 level of $1.3 million.

RANGE

Rangelands in the National Forest System are managed to maintain land productivity for grazing and other uses. The manner and degree to which vegetation is used affects water quantity and quality, soil productivity and stability, wildlife habitat, visual resources, and forage for livestock and wild, free-roaming horses and burros.

The 1984 RPA goal for the range management program was 10 million animal unit months of livestock grazing. (An animal unit month is the amount of forage needed to support a 1,000-pound animal for 1 month.) This goal was met, and the funded goal of 9.9 million animal unit months exceeded.

The Forest Service administered 14,600 permits during the year for grazing cattle, horses, sheep, and goats. Grazing permittees depend on this forage to complement livestock operations on their lands.

Structural improvements such as fences, water developments, and pipelines were constructed on 1.63 million acres, 118 percent of the funded target. Non-structural work, such as seeding, burning, and mechanical or chemical treatment of vegetation was completed on 137,850 acres, 110 percent of the target.

The Forest Service captured 206 excess wild, free-roaming horses and burros and offered them for adoption. In cooperation with local weed control districts, the agency treated 15,541 acres of NFS lands to prevent noxious weeds from spreading to neighboring agricultural lands.

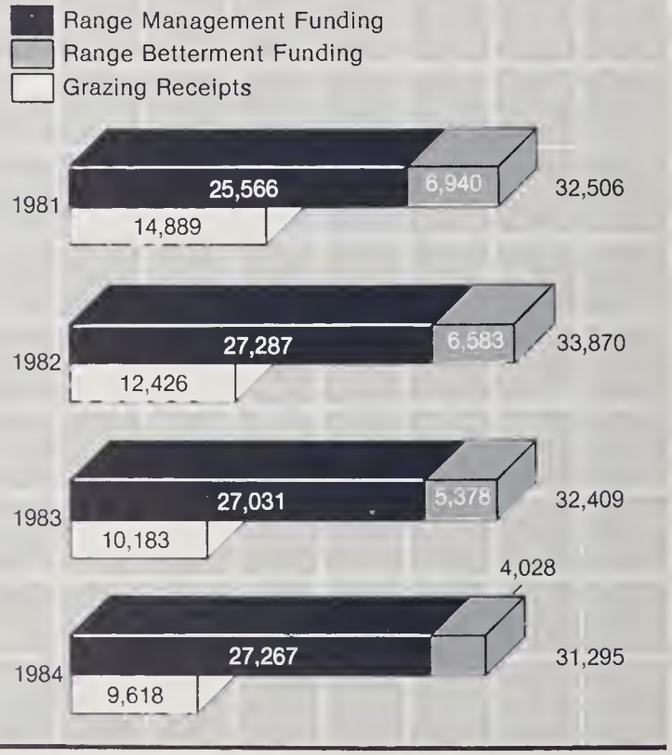
Efforts continued to improve range and watershed conditions and produce more forage and browse on NFS grazing allottments. Treatments prescribed in the allotment management plan were started on 471 allotments during 1984, and management continued on 7,020 allotments, or 68 percent of all allotments. Benefits from these activities are realized anywhere from 3 to 30 years after they are started.

The range program was funded at $31.3 million in 1984, returning $9.6 million from grazing fees (figure 20). Such receipts were 6 percent lower than in 1983 and 39 percent lower than the peak in 1980. The decrease results from the lower fees charged per animal month and not from reduced grazing use.

Grazing Fees

The Public Rangelands Improvement Act of 1978 (PRIA) established, on a 7-year trail basis, the formula that the Forest Service and Bureau of Land Management use to calculate grazing fees. The formula considers the rates

Figure 20
Range Funding and Receipts



An example of burned-area damage. Note overland flow and gully formation.

Same burned area after treatment. Temporary grasses are used to control surface erosion and provide cover until native vegetation recovers.

for leasing private grazing lands, the difference between costs of grazing on public and private lands, beef cattle prices, and the costs of livestock production. Lower beef cattle prices coupled with higher production costs resulted in a grazing fee of $1.37 per animal month in 1984, down 3 cents from 1983.

During 1984, the Forest Service and Bureau of Land Management appraised the market value of grazing on public rangelands by collecting rental/lease transactions on approximately 47,000 private grazing leases in 340 counties in 17 Western States, covering 100 million acres. The appraised fair market values are reported in "Appraisal Report Estimating Fair Market Rental Value of Grazing on Public Lands".

Using the appraisal data and other data collected in the grazing fee study, the Secretaries of Agriculture and Interior will submit an evaluation of the PRIA grazing fee formula to Congress in 1985. The report will also identify other fee options and analyze the socioeconomic impacts of grazing fee systems on permittees, other livestock producers, and local communities.

SOIL, WATER, AND AIR

Administration

The objectives of the soil, water, and air program are to: 1) provide an adequate supply of quality water to meet public needs, 2) protect and improve soil productivity, and 3) maintain or enhance air quality.

The primary activity in 1984 was providing technical assistance to other Forest Service programs, especially timber and minerals. Other activities included: integrating soil, water, and air resource considerations into management plans; insuring that soil, water, and air quality was maintained or improved during management activities; securing water rights needed for National Forest management, quantifying the effects of air pollution for new point source permit applications; conducting smoke management activities; and monitoring visibility on National Forests.

Inventories

In 1984, the Forest Service completed soil inventories on 6.6 million acres. These inventories provide information about soil productivity, erosion, and stability problems. Most Forest Service soil surveys are conducted as part of the National Cooperative Soil Survey.

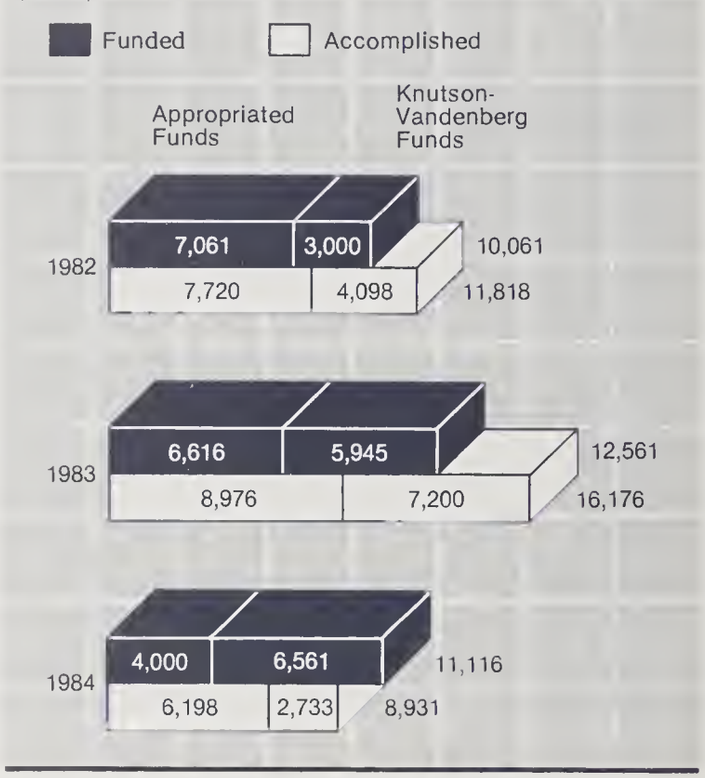
An additional 4.1 million acres of water resource inventories were completed. These inventories provide information needed to improve water yields, quantify water rights, and determine water yield and quality of lakes and streams.

Soil and Water Resource Improvement

Projects to improve soil stability, soil productivity, and water quality and yield were conducted on 6,198 acres with appropriated funds. This is 55 percent higher than the funded target for watershed improvements. The target was exceeded because costs were lower than expected. Improvements on another 2,733 acres were funded by revenues from timber sales under authority of the Knutson-Vandenberg (K-V) Act, the Surface Mining Control and Reclamation Act, and through YCC, volunteer, and other human resource programs. K-V-funded accomplishments were lower this year because of low timber harvest levels in 1982 and 1983. Combined accomplishments totaled 8,931 acres (figure 21), only 28 percent of the 32,000 acre RPA goal for 1984.

Emergency flood damage repairs were made on 9,180 acres under the Agriculture Credit Act. Burned area emergency rehabilitation treatments, which include grass seeding and other erosion control measures, were applied to 16,622 acres.

Figure 21
Soil and Water Resource Improvement
(Acres)



FACILITIES

Because the area managed by the Forest Service is so vast, many building facilities are needed. More than 19 million square feet of owned and leased facilities support programs in the National Forest System, Research, and State and Private Forestry. Most of these facilities (78 percent) are owned rather than leased by the Forest Service. Owned facilities include such things as crew quarters, equipment store houses, aircraft hangars, garages, and administrative offices.

Most Forest Service facilities were constructed with a life expectancy of 30 to 35 years, and at this point, more than half are structurally and functionally beyond their useful lives. As these buildings age, they need more expensive maintenance. Historically, funding for facilities has been less than 1 percent of replacement value. This has resulted in a rapidly rising backlog of necessary maintenance tasks.

The Forest Service is now evaluating the condition of all facilities to determine maintenance needs. Based on the results of the evaluation, maintenance will be improved and obsolete structures will be eliminated or replaced. The long-term goal is to improve the cost-effectiveness of managing and maintaining Forest Service buildings. Energy conservation improvements alone have saved an estimated $1.25 million per year.

ROADS

Construction

In 1984, most Forest Service roads were built to provide initial or improve existing access to timber sale areas. Funding for these roads came from three sources: 1) Purchaser Credit Program (PCP), which provides for building roads in exchange for timber; 2) Purchaser Election Program (PEP), which allows small purchasers to elect to have the Forest Service build roads funded from timber payments; and 3) Forest Road Program (FRP), which provides for building roads with appropriated funds. The FRP funds also provide engineering support (such as design and survey) for all roads, including those built by the purchaser. Fewer than 100 miles of roads were built to provide initial access for managing resources other than timber in 1984.

A total of 7,649 miles of road were constructed or reconstructed through PCP, PEP, and FRP, at a total cost of $372.1 million. The average unit cost per mile increased by 2.18 percent (slightly less than the national rate of inflation). In 1984, 9.1 percent fewer miles were constructed than in 1983. Of the total miles, 5,982 were funded through PCP and PEP, and 1,668 were funded through FRP.

FRP accomplishments exceeded the 1984 target of 1,195 miles by 40 percent. More miles of road were built because:

1. Road building bid prices were lower than anticipated.
2. Road standards were revised, reducing overall costs.
3. Funds for projects that were delayed because of court injunctions and/or right-of-way acquisition problems were spent on less costly projects.

4. The Forest Service cooperated with other government agencies and private industry.

More than half of these FRP roads were located in the major timber-producing regions of Montana, northern Idaho, Washington, Oregon, California, and the Southeast. A total of 97 bridges were also built through the FRP (table 47).

Roads built by timber purchasers through PCP and PEP fell short of the projected 8,313 miles by a total of 2,331 miles. The amount of construction depends upon how much timber is sold during the year. The shortfall can be accounted for as follows:

Sales offered and not sold----------581 miles

Sales deferred until next year--------488 miles

Sales offered late in 1984 but not awarded by the end of the year--------353 miles

Timber sales held up or halted by court injunctions---------- 65 miles

Changes in the timber sale program and sale layout----------728 miles

Sales dropped from program----------116 miles

In 1984, average overall cost per mile for road construction in the PCP and PEP was $21,475, 11.9 percent less than in 1983. PCP and PEP costs were lower because of continuing efforts to reduce road design standards, build the minimum number of roads necessary to harvest timber, and limit reconstruction to a minimum level suitable for timber hauling. Bids and construction costs were also lower because decreased demand for timber roads has heightened competition among contractors.

Of the 5,982 miles of road and 13 bridges built via PEP and PCP, 475 miles were turned back to the Forest Service for construction under the PEP (table 48). Many small purchasers elect to have the Forest Service build these roads in lieu of purchaser credit. This purchaser elect option is used by those who do not have the capital, equipment, and/or personnel to build roads.

Twenty-eight percent of all PCP and PEP roads (1,600 miles) are in the Pacific Northwest, where, historically, nearly one-third of all roads are constructed.

Some of the newly constructed/reconstructed roads will not be fully open for public use because of the safety hazard of mixing public traffic with timber hauling traffic on reduced-standard roads. Also, approximately 75 percent of roads constructed in 1984 will be closed to all traffic during wet weather when roads and other resources are more susceptible to erosion.

Maintenance

There are 342,000 miles of roads on National Forest System land. The Forest Service identifies five levels of road maintenance based on the type and frequency of care a road is given. The levels, with the number and percent of miles in each category during 1984, are as follows:

Level 1. Closed to all traffic. Maintenance only as required to protect resources. (65,000 miles—19%)

Level 2. Single-lane primitive roads intended for use by high-clearance vehicles. (170,000 miles—50%)

Levels 3, 4, and 5. Maintained for passenger car traffic. Road standards, traffic volume, and degree of user comfort increase from level 3 to level 5. (107,000 miles—31%)

• STATE • AND • PRIVATE • FORESTRY •

INTRODUCTION

State and Private Forestry provides technical and financial assistance to States to maximize the social and economic contributions of non-Federal forests and other lands. Principal goals include fire protection on private and non-Federal lands and protection from insects and diseases on all lands. These programs are authorized by the Cooperative Forestry Assistance Act of 1978.

States are responsible for managing, protecting, and planning for non-Federal forests and forest operations. The Forest Service assists States in those activities which provide national benefits.

The State and Private Forestry cooperative programs are presented in four categories:

- Cooperative Land and Resource Protection
- Forest Management and Utilization
- Special Projects
- Other Programs

Congress appropriates funds to the Forest Service for programs in the first three categories. Funds for "other programs" are transferred to the Forest Service by the Soil Conservation Service and other Federal agencies. Targets, listed in tables 51 and 52, are accomplished with a combination of State and Federal funds.

COOPERATIVE LAND AND RESOURCE PROTECTION

Forest Pest Management

The Forest Pest Management (FPM) program assists forest managers in protecting forest resources from insects and diseases on lands of all ownerships. FPM specialists work directly with National Forest managers and forest managers in other departments such as the United States Department of the Interior and Department of Defense, to provide an integrated forest pest management program on all Federal lands. The program also provides for technical and financial cooperation with State and private forest managers to see that effective pest management is practiced on these lands. The program was funded at $29.2 million in 1984; non-Federal sources contributed an additional $8.9 million.

Surveys and Technical Assistance

Detecting and evaluating pest problems in their early stages reduces the loss of trees and tree growth and lowers the cost of suppressing insects and diseases.

Detection and evaluation surveys were made on 568 million acres of forested lands of all ownerships in 1984. This is 21 million acres less than the 1984 RPA goal, but 144 million acres more than the funded target for 1984.

Dwarf mistletoe slowly killing a tree on the Los Padres National Forest, California.

An adult southern pine beetle in damaged wood. Pine beetle tunnels girdle and kill valuable trees.

Figure 22

Pesticide Use on National Forest System Lands

(Thousand Acres Treated)

Total acres treated—479,868

The decision to survey more acres came in response to the gypsy moth and spruce budworm outbreaks in the Northeast, the western spruce budworm and mountain pine beetle outbreaks in the West, and the spruce decline along the Appalachian Mountains.

Suppression

State and Private Forestry encourages forest managers to practice integrated pest management so that timber, watersheds, recreation, wildlife, and visual resources are protected. This approach depends on thorough evaluation and employs the best combination of available pest suppression tactics, including silvicultural, biological, chemical, mechanical, and manual means.

Forest Pest Management funded or cost-shared the treatment of insects and diseases on about 1.03 million acres of forested lands in all ownerships in 1984. Approximately 805,900 acres, or 78 percent, were treated with insecticides. Of these acres, 36 percent were treated with Bacillus thuringiensis (B.t.), a bacterial insecticide; 30 percent with Dimilin®, an insect growth regulator; and 34 percent with conventional insecticides.

Major pest suppression projects were conducted against the spruce budworm and gypsy moth in the East, southern pine beetle in the South, and dwarf mistletoe, mountain pine beetle, and spruce budworm in the West. These suppression projects protected an estimated 798 million cubic feet of merchantable timber and salvaged an estimated 32 million cubic feet of infested merchantable timber, resulting in approximately $70 million in direct benefits. Recreation, wildlife habitat, watershed, and visual resources were also protected.

Special Projects

Special projects were conducted to acquire pest impact information, improve existing technology, and transfer new technology.

Projects included producing a virus to combat the Douglas-fir tussock moth, and participating in an interagency program to provide pesticide benefit and risk information to the U.S. Environmental Protection Agency. In addition, 319 Federal employees were trained in the proper application of pesticides in accordance with the Federal Insecticide, Fungicide, and Rodenticide Act of 1978.

Pesticide Use

Pesticides are a component of integrated pest management. They are used to prevent and suppress insect and disease outbreaks, reduce unwanted vegetation, and control animals that cause damage.

Pesticides are prescribed only after thorough environmental analyses determine that their use is appropriate. Only chemicals registered by the U.S. Environmental Protection Agency are used.

Use of pesticides on National Forest System (NFS) lands decreased in 1984 because of court-imposed restrictions on the use of herbicides in several Western States and a self-imposed nationwide restriction on aerial application of herbicides.

In 1984, about 479,000 acres of NFS lands were treated with pesticides, including 142,000 acres for vegetation management, 196,000 acres for insect and disease prevention and suppression, and 141,000 acres for animal control (figure 22). These figures represent pesticide applications on less than 1 percent of the total acreage of National Forests and Grasslands.

Table 53 is a summary of all pesticide use on National Forests and Grasslands in 1984.

Fire Protection

The Rural Fire Prevention and Control Program provides technical and financial assistance to support the national interest in protecting non-Federal wildlands from fire. A major priority this year was to help States develop an efficient fire program that would serve national interests through the use of the National Fire Management Analysis System.

Twenty-three States initiated the analysis during 1984, and 43 states should complete the analysis by 1987. Results of the State analyses will be used to support funding for State fire activities of National interest. All States have developed 5-year plans which include the Forest Service's role to provide technical and financial assistance for activities that provide national benefits, e.g., sharing interstate firefighting forces.

The Forest Service continued to provide national leadership for the National Interagency Incident Management System (NIIMS). This system coordinates pre-disaster planning by setting up a uniform fire suppression organization, establishing common terminology, and improving communication networks among Federal, State, and local agencies. Many States are beginning to adopt the system for planning responses to floods, fires, earthquakes, and other disasters. NIIMS was used successfully for numerous fire emergencies and for the Utah floods in the spring of 1984.

Oregon, Washington, Arizona, Idaho, Utah, New Mexico, Texas, Montana, and Wyoming adopted NIIMS this year, bringing the total number of States using NIIMS to 14. Eight training sessions were conducted for managers who, in turn, conducted numerous training sessions for State and local firefighters.

The U.S. Postal Service issued a stamp commemorating Smokey's 40th birthday.

New policy was formulated to govern the acquisition and use of Federal excess personal property (e.g., vehicles, fire equipment, aircraft) on loan to State forestry organizations. The new record-keeping systems allow property to be shared among State agencies, while reducing waste, fraud, abuse, or mismanagement. For the first time ever, equipment and vehicles from several Western States were sent across State lines during the severe 1984 fire season.

This year, Cooperative Forest Fire Prevention activities focused on the 40th birthday of Smokey Bear and his successful campaign to heighten public awareness of fire prevention. To honor Smokey's 40th birthday, a commemorative stamp was issued by the U.S. Postal Service in Capitan, New Mexico, and the President proclaimed October 7-13 as Smokey Bear Week. A

Tree planting ceremony in Washington, D.C. Left to right: Chief Peterson, Jackson Weaver, Smokey, Bill Bergoffen, Rudy Wendelin.

Colorado blue spruce tree was planted on the Mall in Washington, D.C. to celebrate the occasion. Among those participating in the tree-planting ceremony were Jackson Weaver (the voice of Smokey), Bill Bergoffen (early promoter of Smokey), and Rudy Wendelin (Smokey's artist). Other activities included a Smokey Bear barn-storming tour through major cities and towns, a special birthday message carried on the Goodyear blimp, and appearances at professional sports events. Royalties from Smokey Bear licenses increased this year to the highest level since 1978.

Emergency Preparedness

The Forest Service, like other Federal agencies, must be prepared to respond quickly to emergencies. This year, in a simulated emergency exercise called REX 84 ALPHA, the Forest Service received praise from the Federal Emergency Management Agency (FEMA) for its high level of organizational commitment and participation.

In cooperation with FEMA, the Forest Service developed plans for response to catastrophic earthquakes, emergency fire suppression assistance to State agencies, and emergency communication and preparedness training.

The Forest Service also developed and implemented a nationwide system for gathering and disseminating information during emergencies that involve Forest Service employees and/or their families, National Forest resources, and the personnel or operations of State forestry cooperators. The plan was successfully tested when floods hit the Intermountain Region last spring.

FOREST MANAGEMENT AND UTILIZATION

Forest Management

The Forest Service, through State forestry organizations, provides technical and financial assistance to landowners to improve production on nonindustrial private forest lands. Assistance is also provided to wood-using industries to encourage efficiency in harvesting and processing.

In 1984, State and Private Forestry hosted the National Forum on Nonindustrial Private Forest Lands. Participants represented all segments of the forestry community. The purpose was to identify problems and opportunities associated with management of nonindustrial private forest (NIPF) lands as well as to exchange new information on the ownership and characteristics of these lands. Information was also available on economic opportunities for timber production through proper forest management.

The final Forum report highlighted 17 issues and identified organizations responsible for tackling these issues. Results of the Forum included concurrence that State forestry organizations should take more responsibility for increasing productivity on NIPF lands. Forestry consultants and the forest industry should also increase efforts to assist landowners. The USDA Extension Service was charged with improving and expanding its information programs to help landowners reach effective decisions on managing their lands more productively. Federal government efforts were deemed necessary to provide national focus, coordination, and some funding to support activities directed toward improving productivity on NIPF lands.

Nationwide, the joint Forest Service and State effort begun in 1983 to increase the productivity of State service foresters is showing favorable results. State service foresters developed forest management plans covering 3.8 million acres of NIPF land. Reforestation was accomplished on 562,000 acres, timber stand improvement on 320,000 acres, and 151,500 landowners received technical assistance.

Wood Utilization

The wood utilization improvement program aims to increase efficiency and reduce waste in harvesting, primary processing (initial milling of logs), construction, and fuelwood production. Better utilization resulting from these programs enabled industry to produce 80

million cubic feet of wood that would otherwise have been wasted. Example of program activities follow:

- Computerized software such as the Sawmill Improvement Program (SIP) and the Felling and Bucking (FAB) Program continue to be popular with industry. During the year, 231 SIP studies and 199 FAB evaluations were processed. Many companies have adapted these programs for their own use. The Forest Service is developing simpler microcomputer versions of FAB and SIP to make them even more useful to industry. The Logged Area Analysis Program, which analyzes logging residues to reduce waste, was converted to microcomputer form this year.

- The technology transfer plan to introduce Truss-Framed System was completed this year. Truss-framed structures have been built in more than 30 States. Other government agencies and building codes have also accepted the system, and over 14,000 copies of "The Truss-Framed Construction Manual" have been sold.

- It is estimated that about 20 percent of the wood harvested in the Nation is burned as fuel. Over 42 million cords of wood are burned in residential stoves and fireplaces each year and some industries are approaching energy self-sufficiency by using wood fuel. Annual sales of woodburning stoves continue at more than 2 million units. The vitality of the wood energy market makes thinning and stand improvement more profitable by providing outlets for low grade and under-utilized materials.

Precise measurements of raw materials and products are made to determine milling efficiency and opportunities for improvement.

Seedlings, Nursery, and Tree Improvement

The Forest Service provided technical and financial assistance to States for upgrading the quality of seedlings produced in Nursery and Tree Improvement programs. This assistance was aimed at those long-term investments and activities that lead to more productive reforestation of non-Federal lands at a reasonable cost.

The Federal-State goal in tree improvement is for all seedlings produced by 2000 to be genetically improved. A recent Forest Service study shows that only 27 percent, or 200 million, of the seedlings produced in State nurseries each year are genetically improved stock. The report projected that nonindustrial private forest lands alone will require 500 million seedlings annually over the next three decades. Yields from genetically improved seedlings are projected to be 10 to 15 percent higher than unimproved seedlings for first generation and 20 to 30 percent higher for second generation stock that comes from genetically improved parents.

Mature loblolly pine cones in a seed orchard.

Urban Forestry Assistance

The Urban Forestry program focuses on providing a better quality of life through the management of trees, forests, and associated resources in and near urban areas. During 1984, State Foresters utilized $1.2 million in Federal funds for urban forestry activities of national interest. They provided over 3,900 assists to planners, developers, builders, city foresters, forestry consultants, and citizen groups. The resulting accomplishments improved the urban environment by helping to reduce loss of forest land to urban sprawl, control soil erosion, protect forests during development, increase the use of urban wood waste, and plant trees for energy conservation.

Throughout the year, the Forest Service worked with various associations to improve urban forestry programs. The most successful partnerships have been with the American Forestry Association (AFA) and the National Urban Forest Council. The Council sponsored five regional urban forestry conferences, attracting more than 1000 participants, and a "How To" series of urban forestry articles in American Forests. The association with AFA and others has greatly increased the Urban and Community Forestry program impact throughout the country.

Soil and Water Management

The Forest Service is responsible for the forestry components of the USDA National Conservation Program. Soil and water management activities conducted this year in 14 States included developing and implementing pollution control programs and training 741 State forestry personnel to use the Universal Soil Loss Equation. This equation helps managers evaluate efforts to reduce erosion and maintain soil productivity. These activities by law must address watershed needs outlined in the RPA assessment and the Resources Conservation Act.

MANAGEMENT IMPROVEMENT

Statewide Forest Resources Planning

The Forest Service helps each State develop and use a systematic process for forest resources planning. Emphasis is on helping States develop their economy through better management of natural resources. Information generated in this process is also helpful in nationwide resource planning.

In 1984, five States completed draft plans and five completed final plans covering a total of 180 million acres. This is 115 percent of the 1984 goal.

Through the Statewide Forest Resources Planning process, the Forest Service helps Federal and State governments answer the question: "How can public investments in forestry-related programs better serve needs for economic development, employment, and environmental protection?" During 1984, the Council of State Governments published two documents highlighting the initial planning successes of Michigan and Mississippi. The documents explain how these States intend to use forest-related programs to diversify the economic base, increase employment, provide affordable housing, and increase State revenues.

Technology Transfer

The Technology Transfer program provides leadership for the prompt application of forestry knowledge so that the Nation's forestry resources can be better used, managed, and protected. Examples of technology transfer projects underway in 1984 follow:

- Two computerized data management software packages for tracking maintenance cost of urban trees were transferred to Oakland and Santa Maria in California. They help improve planning and provide cost-effective management.

- A forestry investment microcomputer program developed by the Forest Service provides managers with highly technical data in a "user friendly" form to help them make sound investment decisions. The program was transferred via workshops, training sessions, and demonstrations to forestry personnel in Texas, Mississippi, Arkansas, Virginia, South Carolina, North Carolina, Alabama, and Florida.

- After 10 years of research on hardwood utilization, new product technology is now available to economically utilize hardwoods that grow among southern pines. This information is being disseminated to forest managers, industrial forest products managers, extension workers, and others concerned with wood utilization. As a result of this new development, one lumber company in Louisiana has decided to open a 25- to 30-million-dollar hardwood flakeboard plant.

- The Forest Service has undertaken a major transfer effort to encourage the forest industry to use hardwoods for structural lumber. Hardwoods have rarely been used in the past because of their tendency to twist and warp. With technology developed by the Forest Products Laboratory, a technique called Saw-Dry-Rip offers potential for making hardwood structural lumber a standard commodity. The technique is being transferred to forest products consultants, sawmill owners and operators, wholesale and retail lumber dealers, and building contractors.

SPECIAL PROJECTS

Pinchot Institute for Conservation Studies

The Pinchot Institute for Conservation Studies at Milford, Pennsylvania is housed at Grey Towers, home of Gifford Pinchot, first Chief of the Forest Service.

A total of 14,300 people participated in programmed activities at Grey Towers during 1984. The primary interpretive theme this year was conservation and Pinchot's role in that movement.

In 1984, the staff prepared two major exhibits, designed a woodland management trail, completed plans for a new site brochure, and hosted 10 conferences. A darkroom and photo file system were also installed this year. The Christmas celebration at Grey Towers attracted nearly 2,000 participants.

This year, the National Friends of Grey Towers, an organization of private citizens, assisted the Forest Service with interpretive and cultural programming as well as conference and activities management and fund-raising at Grey Towers.

Artist's rendition of "Grey Towers," home of Gifford Pinchot, circa 1930, and site of the Pinchot Institute for Conservation Studies.

Boundary Waters Canoe Area

The Boundary Waters Canoe Area Wilderness Act of 1981 authorized cooperation with the State of Minnesota in a forest management intensification program to be applied on State, county, and privately owned forest lands. The purpose is to mitigate the loss of timber production caused by incorporating forest lands into the Wilderness area. Federal funding is authorized for this program through 1990.

Accomplishments in 1984 with $3 million of Federal funds and $750 thousand of State matching funds include 20,000 acres of reforestation, 9000 acres of timber stand improvement, production of 20 million tree seedlings, marketing and utilization assistance for 3.1 million cubic feet of timber products, 368 miles of road reconstruction and maintenance, 13,000 acres of general forest management assistance, and 845 thousand acres of forest inventory. The State forest resource plan was completed, and a pilot unit plan is being developed. Accomplishments for the program are on schedule.

Forest Service hydrologists monitoring water quality in the Lake Tahoe Basin.

Burton-Santini Act

The Burton-Santini Act (P.L. 96-586) authorized the Secretary of Agriculture to make grants within the Lake Tahoe Basin for the purposes of reducing soil erosion and water pollution. The erosion control activities include obliterating unneeded roads and trails, structurally stabilizing slopes, rehabilitating streamside zones, building debris basins, and rehabilitating sanitary land fills. A total of $3,340,000 in assistance grants to local governments was awarded in 1984.

OTHER PROGRAMS

Forestry Incentives

The Forestry Incentives Program (FIP) and the forestry practices of the Agricultural Conservation Program (ACP) provide financial incentives for owners of nonindustrial forests to increase timber production by doing reforestation and timber stand improvement.

In 1984, 183,900 acres were treated under FIP. Under ACP, 68,700 acres were treated (tables 51 and 52). Over the past 5 years, FIP and ACP have provided incentives for almost half of all the reforestation on nonindustrial private lands.

Thirteen States have set higher landowner cost-share rates than required by the national FIP program. In these States, landowners shoulder more of the costs, making it possible to treat more acres with available funding. Six States have their own FIP that supplements the Federal program by about $7.0 million, and several others are considering similar incentives programs.

This year, the Forest Service developed new and more restrictive eligibility standards for FIP with help from the National Association of State Foresters. These standards insure that treatments funded by FIP take place only on the most productive sites.

Tax Incentives

One of the main tax incentives for nonindustrial forest landowners is capital gains treatment of timber income. A New Hampshire study indicated that only 37 percent of nonindustrial private owners who had sold over $1,000 of timber applied for long-term capital gains treatment. To increase owners' knowledge of forestry taxes, articles about forest taxes were published in media targeted for timber producers and their accountants. Articles were published in: The Forest Farmer, Forest Industries, National Woodlands, and the National Public Accountant.

Rural Community Fire Protection

The Rural Community Fire Protection program provides technical and financial assistance to train, organize, and equip rural fire departments. In 1984, funds were available for 2,928 applications, selected from the more than 30,000 submitted by rural communities.

Resource Conservation and Development

The Forest Service is responsible for the forestry aspects of the Resource Conservation and Development program, under the administrative guidance of the Soil Conservation Service. Funds allocated to the Forest Service in 1984 totaled $768,000 in 50 of the authorized 194 project areas throughout the United States.

Forestry funds were used to train woodland owners, promote better utilization of forest products, develop biomass for energy, sponsor forestry field day demonstrations, market Christmas trees, develop wildlife habitat, present forestry educational programs, establish and maintain windbreaks, and stabilize eroding land by planting trees.

Cooperative Watershed Activities

The Forest Service provides technical leadership for the forestry aspects of the small watershed and flood prevention programs, emergency watershed protection, and river basin studies. These programs are administered by the Soil Conservation Service (SCS).

During 1984, an allocation of $250,000 was used to assist local sponsors in planning 71 small watershed projects. The Forest Service spent $3.7 million to implement forestry programs in 87 small watershed and flood prevention projects across the Nation. River basin funds, totaling $1.2 million, supported 35 studies to assess how the forest resource can contribute to the economic and environmental health of river basins.

A total of $1.4 million was allocated by the SCS to the Forest Service for emergency watershed protection projects in Utah, Nevada, Montana, Colorado, and California. These projects, located on both National Forests and private lands, alleviated the hazards to life and property resulting from the devastating floods that occured after the heavy spring snowmelt.

•FOREST•RESEARCH•

INTRODUCTION

The Forest Service research program is responsible for developing scientific and technical knowledge to enhance the economic and environmental values of America's 1.6 billion acres of forest and associated rangelands.

Research is generally long range and high risk, covering a wide spectrum of biological, economic, engineering, and social disciplines. The program as a whole supports the mission and goals of the President, the Department of Agriculture, and the Forest Service.

Much of the research is national in scope, and some is international, extending to nearly every major terrestrial ecosystem. The geographic range of the program is from the tropics to the Arctic and from Hawaii and territories in the Pacific to Puerto Rico in the Atlantic.

Research is conducted through eight regional Forest and Range Experiment Stations and the Forest Products Laboratory at Madison, Wisconsin. More than 2,800 studies are in progress at any one time. Approximately 800 scientists are stationed at 75 locations throughout the States, Puerto Rico, and the Pacific Trust Islands.

The research program is planned and coordinated with related efforts at the 60 forestry schools and the agricultural experiment stations of land grant institutions throughout the United States. Forest Service scientists also work closely with researchers from other public agencies and the forest industry. Many of the scientific accomplishments described in this report will be used to help manage National Forests and State and private lands. Findings and innovations are transferred to these land managers and to Federal, State, and local policymakers through publications, symposia, workshops, and direct public contact (table 63).

The research program also supports international forestry through cooperation with other Federal agencies, the United Nations, and bilateral arrangements with a number of foreign countries.

The 1980 RPA program accorded high priority to research, and recognized that new or improved technology contributed much to increased production of goods and services from the Nation's forests and associated rangelands. Within the RPA program, 23 broad areas of research were selected for emphasis. The Forest Service is currently conducting some research in all 23 areas. In 1984, emphasis was placed on research that would 1) improve the Nation's economic condition while protecting the natural resource base, 2) strengthen and support Federal action programs and international initiatives, and 3) serve critical consumer interests such as lumber standards and safety. Priority was given to maintaining research programs in timber management and genetics, resource protection and management, forest products and engineering, forest economics and inventory, and acid deposition.

In 1984, research appropriations totaled $109.4 million, approximately 7 percent of which supported cooperative studies with colleges, universities, other research organizations, and industry. In addition, the Forest Service received $3.1 million from outside sources for cooperative research (table 61).

BIOTECHNOLOGY

Biotechnology and Forest Products Research

Forest products researchers have discovered an enzyme that breaks down lignin, the natural plastic that cements and stiffens wood fibers. Lignin comprises about 25 percent of wood and, next to cellulose, it is the most abundant organic compound on earth. Until now, the biochemical mechanisms involved in its natural degradation during wood decay were essentially unknown. The lignin-degrading enzyme discovered by researchers is secreted by the same fungus that causes white-rot decay in wood.

This discovery has opened the door for many applications of biotechnology in wood processing, biopulping, biobleaching, converting lignin to useful chemicals, and cleaning up noxious lignin wastes from pulp and mills. A similar line of research has already shown that fungi can be used to take the color out of paper mill effluents. Bioprocessing could lessen the need for traditional chemicals, such as chlorine, presently used in bleaching wood pulp, and reduce energy consumption in industrial wood processing. It could also lead to biological methods for controlling wood decay.

Biotechnology and Gene Transfer in Conifers

Other Forest Service researchers are looking for ways to transfer selected genes from one set of conifer trees to another. The target of this research is blister rust, a fungal disease that kills several species of conifers, including sugar pine. By studying individual sugar pines that are resistant to blister rust, researchers have identified a single gene that carries this resistance trait. Now they want to learn how to transfer that gene to other conifers that are susceptible to the rust. Once the transfer is successful, they will try to grow disease-resistant plants from the transformed cells.

This basic research is being conducted in cooperation with the University of California at Davis, the University of California at Berkeley, and the University of Washington.

Biotechnology in Forest Insect and Disease Research

Using traditional breeding techniques to develop new genetic lines of disease-resistant trees is a costly and time-consuming process. Months, or even years, may pass before trees are mature enough to be evaluated for resistance to some diseases. A new advancement in plant breeding, called somaclonal variation, can dramatically reduce this waiting time.

Transferring 3-week-old shoot cultures of hybrid Populus. These shoots will be rooted in the greenhouse and then tested to determine if somaclonal variation has resulted in greater disease resistance than the original clone.

The technique isolates single, vegetative cells in a culture from which callus tissue and plantlets eventually develop. The resulting selections exhibit a wide range of genetic variation that may be equal to or greater than that obtained from conventional breeding systems. Both callus tissue and plantlets can be inoculated with disease-causing fungi so researchers can determine the relative resistance of different lines.

This system can also be used to screen for tolerance to air pollutants, salinity, and drought—abiotic factors that often play a critical role in predisposing trees to disease epidemics. Researchers on the project will coordinate their work with that of other scientists who are trying to produce trees with desirable silvicultural characteristics.

ATMOSPHERIC DEPOSITION RESEARCH

There is concern that atmospheric deposition in the United States may be causing lakes and streams to become more acidic than normal. It may also be contributing to reductions in forest health, vigor, and growth which have been observed in certain areas of the Eastern United States. In Europe, air pollutants are thought to be linked to the severe economic and ecological damage to forests.

This year, Forest Service researchers studied the possible effects of atmospheric deposition on waters and forest vegetation with a program funded at $1.6 million. They worked in coordination with other member agencies of the National Acid Precipitation Assessment Program (NAPAP). Findings from this research will contribute to the NAPAP national assessments of acidic deposition in 1985, 1987, and 1989. Studies completed in 1984 showed that:

- Nitrogen oxide emissions from the Los Angeles basin are a major source of dry acid deposition affecting nearby mountain watersheds.
- Micro-organisms in the soil and forest floor in southern Appalachian forests rapidly convert precipitated sulfates into organic sulfur. This conversion immobilizes the sulfur and provides a buffer against the impacts of acidic precipitation. This does not mean that acidic precipitation is harmless in this area, but that effects will not be seen immediately.
- Acidification of some clearwater lakes in the northern Lakes States is related to acidic precipitation.
- Pitch pine seedlings treated with acidic rain during two simulated growing seasons actually grew better than control seedlings. This may be because extra nitrogen is available in acidic soil.
- Output (in streams) of hydrogen and sulfate ions is less than input (as precipitation) in some central Appalachian watersheds. Thus, in some cases, researchers believe that plants and soil in the watershed may be preventing stream acidification.
- The sap of several tree species studied was more acidic than normal, perhaps because more nitrogen was incorporated into the trees' amino acids. This acidic sap might contribute to stress on the trees.

JOINT CANADA/UNITED STATES SPRUCE BUDWORMS PROGRAM

The Canada/United States Spruce Budworms Program (CANUSA) was completed on September 30, 1984. CANUSA was a joint, international program established in 1977 to provide safe, economical controls for spruce budworms, and to develop strategies to manage forests susceptible to budworm damage.

The leaders in this accelerated research program were the United States Department of Agriculture and the Canadian Department of the Environment. Strong cooperative ties with other Federal and State agencies, universities, private institutions and foundations, and private industries helped assure the successful completion of the program. Along with many other accomplishments, CANUSA developed:

- Strategies to prevent or reduce losses during outbreaks through improved forest management practices that reduce reliance on chemical controls.

- Hazard rating guidelines to identify areas where there is a potential for high budworm damage. These guidelines enable managers to take corrective actions when needed.
- New products and markets for budworm-killed trees, and guides for salvaging threatened or damaged stands.
- A management decision support system to help managers choose the most effective strategy for dealing with budworms.

Scientific information of worldwide interest generated by CANUSA research is appearing in hundreds of articles in technical journals and in user-oriented publications for forest managers and pest management specialists. A comprehensive technology transfer effort was conceived early in the program and is being carried out in cooperation with State and Private Forestry. Workshops, technical conferences, symposia, tours, and other educational sessions have been conducted to get new and improved information into training programs for silviculturists and entomologists.

CANUSA represents a valuable model for guiding similar research development and application efforts.

ANADROMOUS FISH HABITAT RESEARCH

The salmon fisheries of California, the Pacific Northwest, and Alaska depend greatly upon the forested watersheds of these regions. Over the years, the size of catches and the size of fish have declined dramatically due to excessive harvest of fish and human-caused destruction of habitat.

In an effort to reverse this decline, Forest Service researchers are studying the complex relationships among anadromous fish production, habitat quality, and land use. Research is conducted within the framework of the Western Anadromous Fish Habitat Program.

This program was developed in 1975 to provide anadromous fish resources to meet public needs in concert with other uses of forest and rangeland resources. Three Research Experiment Stations and five National Forest System Regions are involved.

Program researchers in Alaska and the Pacific Northwest are studying how intragravel conditions in spawning areas affect survival of fish embryos. They are also determining what type of winter habitat conditions are needed to rear young trout and salmon. Other studies look at how riparian vegetation influences fish habitat and how managers can improve stream edge habitat for fish spawning and rearing. In the Intermountain West, research focuses on determining the effects of livestock grazing on anadromous fish habitat. The results will be used to develop grazing guidelines for riparian areas. Highly innovative studies in California promise to shed light on the processes involved in stream pool habitat formation. Studies completed in 1984 show that:

- Downed timber in large and small streams is important to survival and production of juvenile salmon.
- During the winter, coho salmon appear to need a complex habitat, most often found in riparian zones of old-growth forests that have not been severely disturbed by management activities.
- An increase of a few degrees in water temperature can tip the ecological balance in favor of production of redside shiners at the expense of steelhead trout.
- Fine sediment entering streams from managed lands can clog streambed gravels, reducing the quality of salmon spawning habitat.

THE VALUE OF FORESTRY RESEARCH

The objective of forestry research is to better understand forest resources and their uses, and to improve the efficiency of forest resource management. Until now, few studies were conducted on the forestry research process and its impacts on the economy and society. In 1984, the Forest Service initiated a program of research to find ways to measure research productivity, learn how research information is obtained by users, and evaluate the economic and social impact of knowledge generated by research. Such information will improve the planning and efficiency of the Forest Service research program.

This year, program scientists evaluated several areas of forest research, including forest products utilization research. They examined the economic benefits derived from 7 major innovations in this field. These innovations earned a real return of 18 percent — not just on the cost of those 7 projects, but on the cost of all forest products utilization research. Similarly, expected returns estimated from oriented strand board research are about 18 to 21 percent in real terms, depending on future market size. Containerized seedling research, which is a relatively small research effort with great practical potential, has been estimated to have returns of 80 to 110 percent to the combined public and private effort.

Other studies underway will help develop more efficient ways to manage Forest Service research and establish research priorities.

LAND AND RESOURCE PROTECTION RESEARCH

Fire and Atmospheric Sciences Research

The objectives of this activity are to learn how to: 1) prevent and control wildfires, 2) reduce loss of life, property, and forest resources from wildfires, 3) reduce weather-related losses of forest resources, and 4) use prescribed fire to achieve forest and range objectives at reduced cost. Examples of 1984 accomplishments follow:

- Researchers developed a computer system called BEHAVE that will predict the spread, intensity, and size of forest fires. This information is vital to fire managers who must make quick but far-reaching decisions about ordering, placing, and coordinating use of expensive firefighting resources. Scientists have trained fire managers in several Federal and State agencies to use BEHAVE.

- Research has shown managers how to vary prescribed fire burning techniques and better utilize residues to reduce smoke emissions by as much as 30 percent.

- Studies have shown that substantial amounts of pesticide are released when pesticide-treated wood is heated slowly in poorly ventilated conditions. Since it is difficult to be sure of the ventilation and temperature in many domestic wood-burning devices, researchers advise people not to burn pesticide-treated wood in their homes.

- The Topographic Air Pollution Analysis System (TAPAS) is a new tool to help managers assess air pollution potential in mountain areas.

- Work is completed on the first part of a computerized model that will help managers select the most cost-effective fire protection organization. The model considers the cost of fire protection as well as the effect of wildfires on the values of resource outputs.

Forest Insect and Disease Research

The objectives of this activity are to enhance the productivity, value, and use of forest and rangeland resources, and to protect wood in use or in storage from insect- and disease-caused damage. Examples of 1984 accomplishments follow:

- The Canada/United States Spruce Budworms Program (CANUSA) was completed on September 30, 1984 (see description on p. 44).

- The Christmas Tree Pest Manual is now available to help Christmas tree growers, nursery operators, horticulturists, extension agents, foresters, students, and others quickly identify pests in the field. In addition to photos and descriptions of 70 major Christmas tree pests, the manual includes cultural, biological, and chemical controls that can help reduce or prevent costly damage.

- A new insecticide, called POUNCE, was recently registered for use against subterranean termites. It is only the fourth termiticide to reach the market in more than 2 decades, and of these, it is the least toxic to mammals.

Forest Inventory and Analysis

This activity provides information about the amount and condition of the Nation's forest lands, the volume of timber, and the rates of growth and harvest. Surveys conducted in 1984 show that:

- The rate of pine growth in Georgia, South Carolina, and North Carolina now appears to be declining, after reaching a peak during the last decade. Pine stands on nonindustrial private forest lands were established largely by natural seeding on abandoned agricultural lands. However, because of the hardwood understory that now exists on these lands, natural seeding is not providing reliable pine regeneration after harvest.

- Manufacturing industries in the United States used more than 1.8 billion cubic feet of lumber and other wood products in 1977. Typical uses include lumber for pallets and skids, mobile homes, and wood for jigs, models, patterns, and flasks. These periodic surveys of wood use help planners predict future timber demands.

- A report published this year shows that Wisconsin households used 1.9 million cords of fuelwood in 1981. Most of the wood comes from trees that would not ordinarily be used for timber products—tops, limbs, dead trees, and poor quality trees. Although most of the fuelwood is still harvested by homeowners, increasing amounts are now being sold by loggers and fuelwood cutters.

- Forest surveys can now provide information about understory vegetation, thanks to recently developed methods of describing the vertical and horizontal arrangement of vegetation in the forest. This information is needed to assess wildlife habitat and grazing potential of forest lands.

Renewable Resources Economics Research

The objective of this activity is to develop better ways to analyze: 1) the costs and benefits of forest management activities and 2) the response of forest products markets to economic and institutional forces. Examples of 1984 accomplishments follow:

- A comprehensive review of the concepts and methods for estimating the value of all wildland resource outputs is now available. This review, complete with empirical estimates of recreation values, will help guide future resource valuation studies.

- A study of the timber sales on National Forests in the Northern Region found that provisions are usually added to the sale to mitigate timber harvesting impacts on wildlife, soil, water, and visual resources. These provisions most commonly affect the location of sale boundaries and the size of harvest blocks.

- Timber productivity on 88 million acres of forest land in the South can be profitably improved. According to recent studies, improvements could earn a 4-percent return above inflation and would cost $4 billion. The increase in net growth from these investments would equal the total net growth in 1970 from the entire Region.

RENEWABLE RESOURCE MANAGEMENT AND UTILIZATION

Trees and Timber Management Research

The objectives of this activity are to: 1) increase the productivity and multiple-use benefits of forest lands, 2) enhance the growth and quality of trees, and 3) maintain the productivity of the land as required in the National Forest Management Act of 1976. Examples of 1984 accomplishments follow:

- A new, authoritative source of information for making forest management decisions is now available. Silvicultural Systems for the Major Forest Types of the United States provides a concise, comprehensive, state-of-knowledge treatise on alternative management opportunities for each of 48 major forest types in the United States.

- Ten years of intensive research has been synthesized into a systematic, objective procedure for prescribing silvicultural treatment for cherry-maple, beech-birch-maple, and oak-hickory stands of the Allegheny region. The system can be automated, and a computer program called SILVAH is available.

- A revision of the Silvicultural Guide for Northern Hardwoods in the Northeast is now available. Major changes resulting from research since the initial publication include: new stocking guides for even-aged stands; yield tables for managed even-aged stands based on computer simulation; silvicultural recommendations for a range in species composition; and details on cutting methods ranging from clearcutting to group selection. The revision contains economic guidelines and adds sections on uneven-aged management.

Watershed Management and Rehabilitation Research

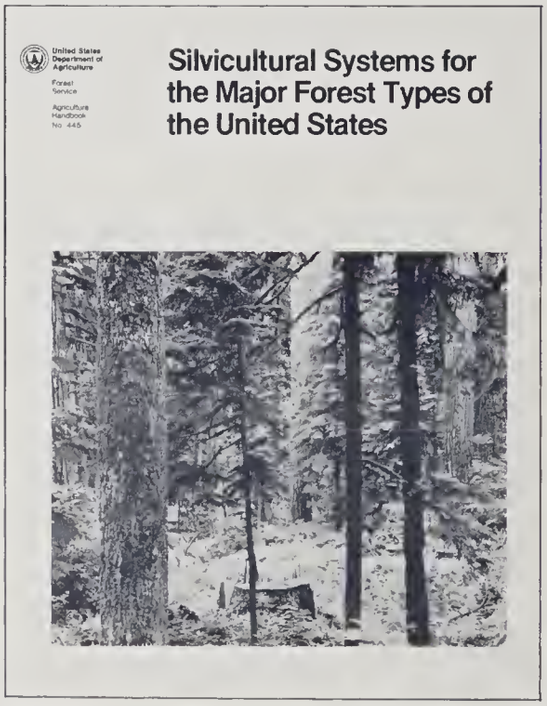
The objectives of this activity are to: 1) learn how to protect, manage, and improve forest and rangeland watersheds and 2) develop cost-effective strategies to rehabilitate surface-mined lands. Examples of 1984 accomplishments follow:

- Researchers have developed a mathematical formula that identifies potential landslide sites with 81-percent accuracy. Also, techniques have been developed for inventorying landslides. These tools help managers assess risks, evaluate long-term site productivity, monitor productivity and damage, and prevent landslide occurrences.

- Three treatments were found to reduce erosion during the first year after road construction. In the central Appalachian Mountains, specifications for minimum-standard logging roads were developed using erosion loss and construction cost data. This concept has been adopted by several private, county, and Federal landowners.

On most sites, proper site preparation, good seedlings, and careful planting ensure successful longleaf pine plantations that are 3 to 5 years ahead of natural regeneration. This vigorous stand on a prepared site is in its fifth growing season since planting.

A manager's reference to silvicultural systems for the major forest types of the United States.



Comparative size of coho salmon from a stream (top) and an artificial "beaver pond" (bottom).

Gaining personal confidence and learning how to work with others were found to be major benefits to the Youth Conservation Corps Program.

Wildlife, Range, and Fish Habitat Research

The objective of this activity is to develop new information for: 1) managing wildlife and fish habitat to recover threatened and endangered species and maintain or increase productivity of game and nongame species; 2) increasing forage production and improving soil stability and vegetative cover on rangelands; and 3) integrating wildlife, fish, and livestock use with other forest and rangeland uses. Examples of 1984 accomplishments follow:

- Studies have shown that natural beaver ponds in small streams provide large volumes of nutrient-rich water ideal for rearing young coho salmon. Young coho salmon grew at phenomenal rates during the winter and summer in a 1-acre simulated beaver pond. This research is helping to develop cost-effective methods to improve coho salmon habitat.

- Recent research indicates that cattle are more compatible with deer in southern forest range than previously thought. Without management, many younger pine plantations become impenetrable and produce little deer food. Regulated grazing could slow plant succession, provide more forage for deer, and probably increase production of preferred deer foods by reducing competing grasses.

- Research has shown that colony sites for the endangered red-cockaded woodpecker are located in relatively open, old-growth southern forests that are mostly pine with a few hardwood trees. By defining how new colonies are formed, researchers have provided the first guidelines to help managers locate and distribute woodpecker nesting habitat.

Forest Recreation Research

The objectives of this activity are to: 1) develop new technology to help managers provide quality outdoor recreation experiences, and 2) develop management guidelines for vegetation in and near urban areas. Examples of 1984 accomplishments follow:

- Scientists developed mathematical models that use readily available information, such as day of the week, month, and weather, to predict visitor use in urban recreation areas.

- A new guide is available to help river managers use public opinion surveys in their decisionmaking. The Recreation Manager's Guide to Understanding River Use and Users describes questionnaires, shows how to administer them, and demonstrates ways to obtain various kinds of information from river users.

- A recent study shows that participants in the Youth Conservation Corps learned about conservation, environmental problems, and natural resource management. More significantly, however, enrollees learned to work more efficiently, participate in group efforts, accept persons of another race, and gain confidence in their ability to find and hold jobs.

Forest Products and Harvesting Research

The objectives of this activity are to: 1) provide technology to harvest and utilize timber more efficiently, 2) develop timber harvesting and transporting systems that are economically and environmentally acceptable, 3) improve the performance of wood products, 4) expand opportunities for wood products exports, and 5) reduce costs and energy consumption in wood processing. Examples of 1984 accomplishments follow:

- The Forest Service cooperated with private industry to develop a process that uses tannins from southern pine bark in the manufacture of cold-setting adhesives. Tannins can now replace two-thirds of the expensive, petroleum-based compound normally used in this process. The use of natural tannins reduces both the cost of these adhesives and U.S. dependence on petrochemicals.

- Scientists at the Forest Products Laboratory developed a simple chemical test to separate white oak from red oak logs. It is especially important to identify red oak logs in shipment because they can carry oak wilt, a disease that can easily spread to uninfected areas. Thanks to this test, foreign buyers of oak logs can separate out the red oak without having to fumigate the entire shipment to prevent oak wilt disease.

- Scientists demonstrated that several types of interior and exterior particleboard can be manufactured from ponderosa pine sawmill residues in the Black Hills area. They also showed that lower freight rates to the Midwest would contribute to economic viability of a large particleboard plant. These findings convinced one manufacturer to open a plant in South Dakota.

- Engineers have developed a simulation yarding model called SIMYAR to help timber harvest planners create the optimum skyline yarding configuration for a particular site without much field work. Because yarding costs are normally so high, any efficiences gained through this analysis can cut costs considerably.

INTERNATIONAL FORESTRY

The objective of International Forestry is to provide leadership, coordination, and direction for Forest Service involvement in forestry worldwide. Examples of 1984 accomplishments follow:

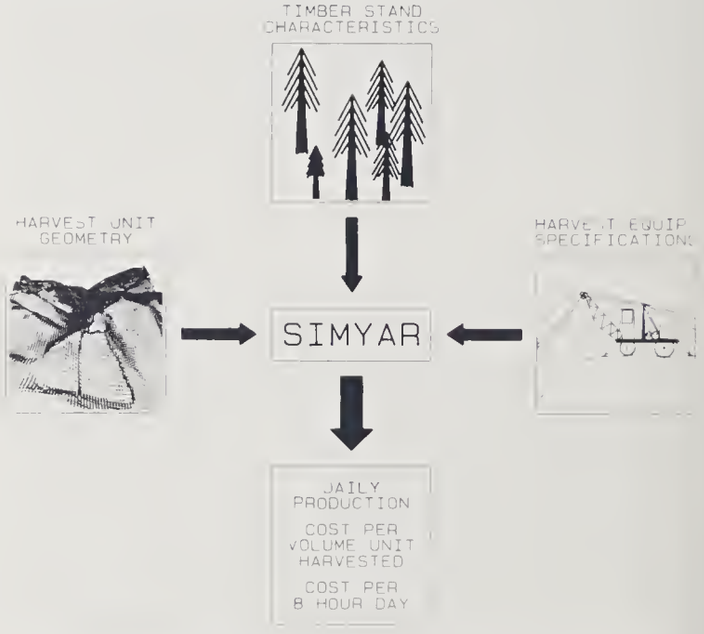
- More than 200 foresters and related specialists from 40 countries visited the Forest Service through the International Visitor Program.

- Forest Service personnel played leading roles in the Food and Agriculture Organization's statutory bodies such as the North American Forestry Commission, Latin American Forestry Commission, Committee on Forestry, and the Committee on Forest Development in the Tropics. Through the International Union of Forestry Research Organizations, the Forest Service helped initiate a program to strengthen forestry research in developing countries.

- The Forestry Support Program (FSP), a joint Forest Service/Agency for International Development (AID) effort, was extended through 1988. FSP identifies sources of expertise for forestry development work in tropical nations that receive AID assistance. The program extension will provide for new international initiatives in forest enterprise development, forestry-agriculture coordination, and training/education development.

- The International Forestry staff coordinated interchanges on forestry matters between the United States and Brazil, Portugal, Spain, the Federal Republic of Germany, Netherlands, Australia, India, and Canada.

SIMYAR, a computer simulation model depicting cable logging operations, uses parameters that describe the harvest units' geometry, timber stand characteristics, and harvest equipment specifications to produce estimates of daily production and cost.



• LIST • OF • TABLES •

Table 1—Summary statement of receipts and expenditures—fiscal years 1983-84

	1984		1983		Percent Change 1983 to 1984	
	Receipts	Expenditures	Receipts	Expenditures	Receipts	Expenditures
	1,000 constant 1984 dollars					
National Forest programs:						
Receipts:						
Cash receipts and appropriation expenditures:						
Sale of timber and use of other forest resources	598,808	0	472,250	0	+27	0
Use of National Grasslands and land utilization areas	38,541	0	41,881	0	-8	0
Timber sale area betterment (K-V) 1/	165,463	0	139,456	0	+19	0
Cooperative work for others	43,976	0	35,146	0	+25	0
Brush disposal	60,290	0	49,662	0	+21	0
Miscellaneous (sales, rentals, damages, etc.)	15,259	0	7,924	0	+93	0
Restoration of forest lands and improvements	160	0	222	0	-28	0
Recreation permit sales and fees from designated areas	4	0	4	0	0	0
Timber salvage sales	20,514	0	14,642	0	+40	0
Subtotal	943,015	0	761,187	0	+24	0
Cash receipts from NFS lands collected in conjunction with, and deposited to, accounts of other agencies	85,468	0	80,975	0	+6	0
Non-cash income (roads built by timber purchasers)	154,108	0	159,025	0	-3	0
Total	1,182,591	0	1,001,187	0	+18	0
Expenditures:						
Operating costs	0	1,562,017	0	1,451,419	0	+8
Capital outlay 2/	0	175,391	0	328,773	0	-47
Total	0	1,737,408	0	1,780,192	0	-2
Other Forest Service programs:						
Forest Research programs:						
Forest research	0	113,344	0	114,984	0	-1
Research construction	0	1,015	0	37	0	+2,643
Cooperative research work	1,187	780	1,767	1,069	-33	-27
Gifts, donations, and bequests for forest rangeland research	0	8	0	0	0	+100
Tongass timber supply fund	0	1,600	0	2,038	0	-21
Energy security reserve	0	188	0	208	0	-10
Federal photovoltaics utilization program	0	32	0	154	0	-79
Subtotal	1,187	116,967	1,767	118,490	-33	-1

See footnotes at end of table.

Table 1—Summary statement of receipts and expenditures—fiscal years 1983-84—Continued

	1984		1983		Percent Change 1983 to 1984	
	Receipts	Expenditures	Receipts	Expenditures	Receipts	Expenditures
			1,000 constant 1984 dollars			
State and Private Forestry programs:						
State and private forestry cooperation	0	60,920	0	66,651	0	-18
Rural community fire protection	0	3,225	0	3,247	0	-1
Flood prevention and watershed protection	0	2,050	0	2,675	0	-23
License programs (Woodsy Owl and Smokey Bear)	186	33	73	16	+155	+106
Forestry incentives and other programs 3/	0	2,839	0	2,735	0	+224
Subtotal	186	69,067	73	75,324	+155	-8
Human Resource programs:						
Job Corps	0	55,663	0	56,344	0	-1
Young Adult Conservation Corps	0	0	0	0	0	0
Senior Community Service Employment	0	20,691	0	18,761	0	+10
Subtotal	0	76,354	0	75,105	0	+2
Grand total, all programs	1,183,964	1,999,796	1,003,027	2,049,111	+18	-2
Cash receipts distributed to States, counties and Puerto Rico:						
Payments to States and Puerto Rico	0	192,711	0	137,640	0	+40
Payments to school funds, Arizona and New Mexico	0	0	0	17	0	-100
Payment to Minnesota	0	712	0	738	0	-4
Payments to counties, National Grasslands and Land Utilization Areas	0	9,912	0	10,721	0	-8
Subtotal	0	203,335	0	149,116	0	+36
Internal equipment and supply service (Working Capital)	116,279	94,876	106,294	89,780	+9	+6
Reimbursements for work performed for government and others included above	0	53,997	0	58,665	0	-8

1/ K-V = Knutson-Vandenberg
2/ Estimated annual depreciation may be added in lieu of capital outlay to compare operating costs with receipts, 1984--$93,779; 1983--$169,354.
3/ Includes Resource Conservation and Development, River Basins, and Pesticide Impact assessment funds transferred from ARS.

Table 2—Summary statement of values and expenditures—fiscal year 1984

Item	Units 1/	Quantity	Average value per unit	Total value
		1,000		million dollars
Value:				
Minerals				
Common	Tons	-- 2/	--	--
Locatable	Tons	--	--	--
Leasable 3/	BBTU	606.8	1,766.20 4/	1,071.1
Timber	MBF	10,661.7	65.54 5/	698.7
Recreation 6/	RVD	185,227.1	7.27 7/	1,347.3
Wilderness and primitive	RVD	10,209.3	12.33 7/	125.9
Wildlife and fish				
Recreation	RVD	32,117.5	20.14 7/	647.0
Commercial	Pounds	118.0	1.13 7/	133.8
Range	AUM	8,822.4	11.03 7/	97.3
Water	AF	--	--	--
Total values				4,121.7
Expenditures:				
National Forest System				1,737.4
Forest Research				117.0
State and Private Forestry				69.1
Human Resource Programs				76.4
Total expenditures				1,999.8
Net value, total				2,121.9
Net value, National Forest System only				2,384.3

1/ BBTU = Billion British thermal units, MBF = thousand board feet, RVD = receation visitor days, AUM = animal unit month, AF = acre feet.
2/ -- = not available.
3/ Oil, gas, and coal only.
4/ Average values for 1983 as provided by DOE, FS.
5/ Actual value at time of sale.
6/ Exclusive of wilderness, wildlife and fish.
7/ 1985 RPA program values adjusted to 1984.

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Table 3—Statement of receipts—fiscal years 1980-84

Receipts	1984	1983	1982	1981	1980
			1,000 dollars		
Receipts from sale and use of forest resources:					
Timber and forest products	**544,265**	398,498	251,022	581,441	625,407
Grazing	**9,618**	10,183	12,426	14,889	15,850
Land uses	**3,442**	3,162	2,860	2,422	2,336
Recreation	**27,541**	27,801	25,352	19,416	18,317
Power	**834**	733	679	485	488
Minerals	**51,649**	54,932	57,885	62,080	40,472
Subtotal	**637,349**	495,309	350,224	680,733	702,870
Receipts from deposits for expenditures on National Forests:					
Timber sale area betterment	**165,463**	134,351	77,546	124,860	116,576
Timber salvage sales	**20,514**	14,106	6,822	11,884	14,530
Brush disposal	**60,290**	47,844	29,588	43,844	42,374
Restoration of improvements	**160**	214	56	97	198
Cooperative work	**43,976**	33,859	26,254	27,525	29,985
Subtotal	**290,403**	230,374	140,266	208,210	203,663
Other receipts:					
Misc. (sale, rents, etc.)	**14,844**	7,506	4,724	4,052	-2,375 1/
Golden Eagle passports	**4**	4	4	4	5
Sale of personal property	**35**	19	42	40	47
Cooperative research	**1,187**	1,702	1,003	1,079	587
Royalties from sale of Smokey Bear and Woodsy Owl products	**186**	70	54	96	102
Acquisition of lands to complete land exchanges 2/	**380**	109	151	532	0
Subtotal	**16,636**	9,410	5,978	5,803	-1,634 1/

See footnotes at end of table.

Table 3—Statement of receipts—fiscal years 1980-84—Continued

Receipts	1984	1983	1982	1981	1980
			1,000 dollars		
Other income:					
Estimated collections by Dep. of Energy for power licenses on Public Domain National Forest land	618	411	1,004 3/	542	86
Estimated collections by Dep. of the Interior for mineral leases on Public Domain National Forest land 4/	84,850	77,600	68,600	63,000	219,264 (47,000)
Value of roads built by timber purchasers in lieu of cash	154,108	153,203	164,128	189,559	164,226
Subtotal 4/	239,576	231,214	233,732	253,101	383,576 (211,312)
Other net deposits: 2/					
Moneys advanced on active timber sales:					
Bal. from previous year	264,534	143,580	231,450	268,574	0
Deposited current year	869,404	755,185	426,903	800,322	0
Trans. to other accounts	-920,085	-634,231	-514,773	-837,446	0
Bal. on deposit	213,853	264,534	143,580	231,450	0
Amounts deposited pending disposition:					
Bal. from previous year	15,292	12,483	12,372	7,780	0
Deposited current year	9,709	9,862	20,226	21,317	0
Trans. to other accounts	-24,673	-7,053	-20,115	-16,725	0
Bal. on deposit	328	15,292	12,483	12,372	0
Subtotal	214,181	279,826	156,063	243,822	0
Total 4/	1,398,145 5/	1,246,133 5/	886,263 5/	1,391,669 5/	1,288,475 (1,116,211)

1/ Includes receipt account adjustment of $2,700,000 from previous year.
2/ 1981 was first year of reporting.
3/ Increase due to an additional billing made by Federal Energy Regulatory Commission.
4/ Department of the Interior procedures for crediting mineral lease collections on National Forest System lands were revised in 1981. Previous years are adjusted and shown within parentheses.
5/ For comparison with 1980, use total receipts, less other net deposits. Other net deposits not reported for previous years.

Table 4—Statement of receipts—fiscal year 1984

Receipts	National Forests	Oregon and California grant lands	National Grasslands & L.U. Areas 1/	Other	Total
			1,000 dollars		
Receipts from sale and use of forest resources:					
Timber and forest products	526,036	18,225	4		544,265
Grazing	8,077	3	1,538		9,618
Land uses	3,034	39	369		3,442
Recreation	27,523		18		27,541
Power	791		43		834
Minerals	15,080		36,569		51,649
Subtotal	580,541	18,267	38,541		637,349
Receipts from deposits for expenditures on National Forests:					
Timber sale area betterment	165,463				165,463
Timber salvage sales	20,514				20,514
Brush disposal	60,290				60,290
Restoration of improvements	160				160
Cooperative work	43,976				43,976
Subtotal	290,403				290,403
Other receipts:					
Misc. (sale, rents, etc.)				14,844	14,844
Golden Eagle passports 2/				4	4
Sale of personal property 2/				35	35
Cooperative research				1,187	1,187
Royalties from sale of Smokey Bear and Woodsy Owl products				186	186
Acquisition of lands to complete land exchanges				380	380
Subtotal				16,636	16,636

See footnotes at end of table.

Table 4—Statement of receipts—fiscal year 1984—Continued

Receipts	National Forests	Oregon and California grant lands	National Grasslands & L.U. Areas 1/	Other	Total
			1,000 dollars		
Other income:					
Estimated collections by Dep. of Energy for power licenses on Public Domain National Forest land	618				618
Estimated collections by Dep. of the Interior for mineral leases on Public Domain National Forest land	84,850				84,850
Value of roads built by timber purchasers in lieu of cash	154,108				154,108
Subtotal	239,576				239,576
Total	1,110,520	18,267	38,541	16,636	1,183,964
Other net deposits:					
Moneys advanced on active timber sales					
Bal. from previous year	264,534				264,534
Deposited current year	869,404				869,404
Trans. to other accounts	-920,085				-920,085
Bal. on deposit	213,853				213,853
Amounts deposited pending disposition					
Bal. from previous year	15,292				15,292
Deposited current year	9,709				9,709
Trans. to other accounts	-24,673				-24,673
Bal. on deposit	328				328
Subtotal	214,181				214,181
Grand total	1,324,701	18,267	38,541	16,636	1,398,145

1/ Land Utilization Projects.
2/ These receipts are credited to the Department of the Interior.

Table 5—Statement of expenditures—fiscal year 1984

	Total	Work for other public agencies (reimbursables)
	1,000 dollars	
National Forest System:		
Protection and management	647,559	17,103
Fighting forest fires	66,264	4,037
Cooperative work for others	36,020	
Cooperative law enforcement	5,332	
Flood prevention and watershed protection	3,638	3
Restoration of forest lands and improvements	149	
Reforestation and timber stand improvement 1/	91,426	35
Timber sale betterment (K-V) 2/	106,433	2
Brush disposal	37,440	6
Timber salvage sales	13,993	1
Oregon-California grant lands	3,354	
Range betterment	3,939	
Youth Conservation Corps (NFS)		
Construction of facilities	42,208	1,372
Acquisition of lands, Forest Service	735	
Acquisition of lands, Land and Water Conservation Fund	37,561	
Construction of forest roads and trails	235,146	882
Timber purchaser roads constructed by the Forest Service	10,016	
Restoration of roads, Federal highway funds	7,849	
Road and trail maintenance	86,261	-47
Highland scenic highway		
Mount St. Helens emergency activities	846	
Tongass timber supply fund	46,391	
General administration 3/	254,848	905
Subtotal	1,737,408	24,299
Research:		
Tongass timber supply fund	1,600	19
Forest research	113,344	5,192
Construction of research facilities	1,015	
Cooperative research	780	
Energy security reserve, DOE	188	
Federal photovoltaics utilization program, DOE	32	32
Gifts, Donations, and Request for Forest and Rangeland Research	8	7
Subtotal	116,967	5,250

See footnotes at end of table.

Table 5—Statement of expenditures—fiscal year 1984—Continued

	Total	Work for other public agencies (reimbursables)
	1,000 dollars	
State and Private Forestry:		
Cooperation and general forestry assistance	60,920	3,335 4/
Resource conservation and development	790	
Rural community fire protection grants	3,225	
River basins	1,234	
Flood prevention and watershed planning	2,050	
Licensee programs, Smokey Bear, and Woodsy Owl	33	
FIP, ACP, and miscellaneous	815	
Subtotal	69,067	3,335
Human Resource Programs:		
Job Corps	55,663	422
Senior citizens and miscellaneous	20,691	20,691
Subtotal	76,354	21,113
Total	1,999,796	53,997
Internal equipment and supplies service:		
Working Capital Fund	94,876	94,876
Grand total	2,094,672	148,873

1/ Includes obligations of $80,026,638 for Reforestation Trust Fund.
2/ K-V = Knutson-Vandenberg Act
3/ General administration also supports activities in Forest Research, State and Private Forestry, Construction, and Land Acquisition.
4/ Includes reimbursable expenditures for the Agricultural Conservation Program (ACP) and Forestry Incentives Program (FIP) for Agricultural Stabilization and Conservation Service.

Table 6--Statement of expenditures—fiscal years 1980-84

	1984 1/	1983 1/	1982 1/	1981	1980
			Million dollars		
National Forest System	**1,737.4**	1,715.0	1,600.1	1,967.1	2,006.8
Forest Research	**117.0**	114.1	118.6	141.7	137.6
State and Private Forestry	**69.0**	72.6	75.2	94.1	105.8
Human Resource Programs	**76.4**	72.4	88.5	134.2	181.7
Working Capital Fund	**94.9**	86.5	111.0	91.3	-- 2/
Total 3/	**2,094.7**	2,060.6	1,993.4	2,428.5	2,431.9

1/ All general administration expenditures are included in National Forest System for 1982-84; for past years they are included in each line item.
2/ -- = Not available as separate item.
3/ Columns may not add due to rounding.

Table 7—Distribution of employees by program and occupational category—selected fiscal years

	1984	1983	1982	1980	1975
Research:					
Clerical	480	571	599	627	460
Technical	857	1,042	1,071	968	528
Administrative	215	241	259	302	246
Professional	1,099	1,240	1,266	1,452	1,408
Subtotal	2,651	3,094	3,195	3,349	2,642
State and Private Forestry:					
Clerical	52	58	106	163	81
Technical	33	30	61	80	31
Administrative	23	23	34	42	28
Professional	109	120	229	347	256
Subtotal	217	231	430	632	396
National Forest System:					
Clerical	5,131	5,312	5,440	6,361	6,411
Technical	21,399	25,761	25,331	30,036	28,774
Administrative	2,519	2,777	2,917	2,370	1,860
Professional	9,750	9,988	10,201	9,082	7,562
Subtotal	38,799	43,838	43,889	47,849	44,607
Total	41,667	47,163	47,514	51,830	47,645

Table 8—Distribution of employees by tour of duty as reported in July of selected years

	1984	1983	1982	1980	1975
Permanent full-time	30,030	30,752	30,375	21,421	19,568
Other permanent	5,353	5,325	6,799	15,815	12,115
Temporary	13,837	14,899	15,624	24,043	18,076
Total	49,220	50,976	52,798	61,279	49,759

Table 9—Summary of Forest Service Human Resource Programs—fiscal year 1984

Program	Program funding	Value of work accomplished	Persons served	Percent		Person years accomplished	Percent placement	Return per dollar invested
				Women	Minority			
	Million dollars							Dollars
Youth Conservation Corps 1/	3.5 2/	4.8	2,164	47	16	359	-- 3/	1.37
Job Corps 4/	43.1	13.9	7,250	10	54	2,899	80	--
Senior Community Service Employment Program 5/	21.1	31.3	5,885	33	21	2,717	13	1.48
Volunteers in the National Forests 6/	Unfunded	23.4	43,496	30	11	1,784	--	--
Hosted programs	Unfunded	9.5	6,559	20	39	744	--	--
Total	67.7	82.9	65,354	--	--	8,503	--	--

1/ Figures listed are for the portion of the program operated by the Forest Service.
2/ While funds were not directly appropriated for Youth Conservation Corps, the program operated at $3.5 million as authorized in the 1984 Appropriations Act.
3/ -- = not applicable.
4/ Statistics are for a 9-month program period, October 1, 1983, through June 30, 1984.
5/ Statistics are for the July 1, 1983, through June 30, 1984, program year.
6/ Statistics include the Touch America Project (TAP).

Table 10—Summary of National Forest System accomplishments compared to funded output levels and 4-year average—fiscal year 1984

Resource Area	Activity	Unit of Measure 1/	1984 Funded	1984 Accomplished	1984 Percent of funded	1981-84 average accomplishment	1984 as percent of 4-year average
Resource:							
Recreation	Visitor use	MM RVD's	228.2	227.6	100	231.1	98
Wilderness	Maintenance	MM acres	25.2	25.2 2/	100	25.2	100
Wildlife and fish	Habitat improvement	M acres	343.1	365.9 3/	107	364.7 2/	100
Range	Permitted grazing use	MM AUM's	9.8	10.0	102	10.0	101
Timber	Sales offering	B bd.ft.	11.7	11.9	102	11.6	102
	Silvicultural exams	MM acres	5.6	6.3	112	6.8	93
	Reforestation						
	Appropriated funds	M acres	124.0	180.7 4/	146	203.4	89
	K-V funds 5/	M acres	215.0	195.3	91	182.5	107
	Timber stand improvement						
	Appropriated funds	M acres	181.7	250.1	138	254.5	98
	K-V funds	M acres	142.0	111.5	79	124.7	89
Soil and water	Resource improvement	M Acres	4,000	6,198 6/	155	6,836.0 6/	91
Minerals	Leases and permits	Cases	20,377	27,310	134	28,027.8	97
Support:							
	Trail construction/ reconstruction	Miles	425	528	124	412.8	128
	Road construction						
	Appropriated funds	Miles	1,195	1,668	140	1,692.0	99
	Purchaser credit	Miles	8,552	5,982 7/	70	6,853.5 4/	87
	Fuel management	M acres	116.4	206.6 8/	177	300.2	69
	Land acquired						
	Purchase and donation	M acres	18.5	22.8	123	74.0	31
	Exchanges	M acres	116.0	185.8	160	143.0	130
	Landline location	Miles	6,635	6,808	103	6,384.5	107

1/ M = thousand, MM = million, B = billion.
2/ Does not include 6.9 million acres added to in the Wilderness Preservation System by the 98th Congress after October 1, 1984.
3/ Includes 170,047 acres accomplished with Knutson-Vandenberg funds in 1984; and a 1981-84 average of 115,940 acres.
4/ Increased accomplishment due to the 65,500 acres of advanced site prep done in 1983 with Emergency Jobs Program Funds.
5/ K-V = Knutson-Vandenberg Act.
6/ Does not include 2,733 acres accomplished with K-V funds in 1984 and a 1982-84 average of 4,677 acres.
7/ Includes 475 miles turned back to Forest Service in 1984; and a 1981-84 average of 972 miles.
8/ An additional 1,560 acres were accomplished in 1984 through human resource programs and 315,175 acres using brush disposal funds. In 1981-84 the average was 9,394 acres accomplished through human resource programs and 337,276 using brush disposal funds.

Table 11—National Forest System funding—fiscal year 1984 compared to 1981-84 average

	1984		1981-84 average 1/	Percent of actual to average
	Actual	RPA 1/		
	1,000 constant 1984 dollars 2/			
Minerals area management	**25,670**	31,790	21,713	118
Land management	**18,709**	47,100	21,360	88
Landline location	**29,448**	44,570	27,935	105
Maintenance of facilities	**14,070**	22,860	15,676	90
Forest fire protection	**156,734**	199,540	158,296	99
Fighting forest fires	**35,301**	1,000	57,860	61
Cooperative law enforcement	**5,175**	8,010	4,920	105
Forest road maintenance	**64,650**	121,430	70,960	91
Forest trail maintenance	**9,267**	19,240	12,245	76
Sales administration and management	**187,547**	260,360	177,428	106
Reforestation and stand improvement 3/	**85,582**	130,890	113,198	76
Recreation use	**100,919**	158,630	101,565	99
Wildlife and fish habitat management	**35,360**	47,580	35,556	99
Range management	**27,267**	44,990	28,587	95
Soil and water management	**29,956**	47,910	32,415	92
Subtotal	**825,655**	1,185,900	879,714	94
General administration	**259,865**	314,120	275,289	94
Youth Conservation Corps	**0**	-- 1/	882	00
Construction and land acquisition:				
Construction of facilities 4/	**23,445**	95,510	28,549	82
Forest road construction	**222,675**	339,900	229,085	97
Forest trail construction	**5,182**	15,480	4,662	111
Forest roads purchaser construction 5/	**(240,000)**	(330,800)	(243,198)	99
Mount St. Helens 6/	**(0)**	--	0	
Chugach Natives, Inc. 6/	**(0)**	--	0	
Subtotal	**251,302**	450,890	262,295	96

See footnotes at end of table.

Table 11—National Forest System funding—fiscal year 1984 compared to 1981-84 average—Continued

	1984		1981-84 average 1/	Percent of actual to average
	Actual	RPA 1/		
	1,000 constant 1984 dollars 2/			
Land acquisition	40,075	157,590	44,178	91
Acquisition of lands for Winema NF	281	--	70	400
Acquisition of lands for National Forests, special acts	780	780	804	97
Acquisition of lands to complete land exchange	380	860	318	120
Appropriated trust fund	90	90	95	95
Range betterment	4,028	5,200	6,186	65
Permanent appropriations	382,154	564,290	396,243	96
Trust funds	231,103	199,040	176,450	131
Total 7/	1,995,713	2,878,760	2,042,524	98

1/ In order that a comparison may be made with 1984 actual, general administration has been eliminated from individual line items and is shown as a separate entry. Items not included in the RPA are marked "--".
2/ GNP implicit price deflator used for 1981-83.
3/ Includes Reforestation Trust Fund dollars.
4/ Excludes construction of research facilities, which is included in tables 60 and 61.
5/ This account was taken off budget in 1982. For comparison, the amounts are shown as non-add items.
6/ Funds were provided for unique circumstances and are not included in comparison.
7/ Excludes Mount St. Helens and Chugach Natives appropriations which were for unique circumstances, and forest roads purchaser construction, which was taken off budget in 1982.

Table 12—National Forest System funding—fiscal years 1981-84

	1984	1983	1982	1981 1/
			1,000 dollars	
Minerals area management	25,670	22,598	18,691	15,175
Land management	18,709	19,935	20,636	20,547
Landline location	29,448	25,034	25,011	25,341
Maintenance of facilities	14,070	21,710	11,833	11,523
Forest fire protection	156,734	153,889	142,234	141,092
Fighting forest fires	35,301	1,000 2/	69,004	104,275
Cooperative law enforcement	5,175	5,174	3,734	4,411
Forest road maintenance	64,650	73,666	65,286	62,473
Forest trail maintenance	9,267	13,988	11,312	11,226
Sales administration and management	187,547	162,125	161,244	155,485
Reforestation and stand improvement 3/	85,582	161,963	95,611	82,911
Recreation use	100,919	99,774	91,180	89,363
Wildlife and fish habitat management	35,360	33,349	33,136	31,542
Range management	27,267	27,031	27,287	25,566
Soil and water management	29,956	28,713	32,015	30,558
Subtotal	825,655	849,949	808,214	811,488
General administration	259,865	260,915	242,290	267,097
Mount St. Helens 4/	(0)	(0)	(0)	(13,442)
Youth Conservation Corps	0 5/	3,400	0 5/	0
Construction				
Construction of facilities 6/	23,445	51,007	17,465	16,389
Forest road construction	222,675	245,169	236,204	159,303
Forest trail construction	5,182	4,936	4,038	3,443
Forest roads purchaser construction 7/	(240,000)	(240,000)	(242,542)	(210,000)
Mount St. Helens 4/	(0)	(0)	(0)	(22,607)
Chugach Natives, Inc. 4/	(0)	(9,000)	(3,000)	(0)
Subtotal	251,302	301,112	257,707	179,135

See footnotes at end of table.

Table 12—National Forest System funding—fiscal years 1981-84—Continued

	1984	1983	1982	1981 1/
		1,000 dollars		
Land acquisition	40,075	63,077 8/	26,262	37,015
Acquisition of lands for Winema NF	281	0	0	0
Acquisition of lands for National Forests, special acts	780	753	724	754
Acquisition of lands to complete land exchange	380	109	151	532
Appropriated trust fund	90	90	84	90
Range betterment	4,028	5,378	6,583	6,940
Permanent appropriations	382,154	296,819	365,454	432,493
Trust funds	231,103	169,937	111,904	153,465
Total 9/	1,995,713	1,951,539	1,819,373	1,889,009

1/ In order that a comparison may be made with 1982-84 general administration has been eliminated from individual line items and is shown as a separate entry.
2/ The Forest Service did not receive a supplemental fire appropriation in 1983. Under a new procedure, actual expenses will be reimbursed the following year.
3/ Includes Reforestation Trust Fund dollars.
4/ Funds were provided for unique circumstances and are not included in comparison.
5/ While no funds were appropriated directly to YCC the Forest Service operated a $3,500,000 as authorized in the 1984 Appropriations Act and $1,600,000 program as authorized in the 1982 Appropriations Act.
6/ Excludes construction of research facilities, which is included in Table 62.
7/ This account was taken off budget in 1982. For comparison, the amounts are shown as non-add items.
8/ Includes $6.2 million transferred from National Park Service.
9/ Excludes Mount St. Helens and Chugach Natives appropriations, which were for unique circumstances, and forest roads purchaser construction, which was taken off budget in 1982.

Table 13—Summary of National Forest System accomplishments compared to RPA goals—fiscal year 1984

Resource area	Activity	Unit of measure 1/	1984 RPA goal	1984 Accomplished	1984 Percent of RPA accomplished	1981-84 average RPA goal	1981-84 average Accomplished	1981-84 average Percent of RPA accomplished
Final output 2/								
Timber	Sales offering	B bd. ft.	12.2	11.9	98	12.0	11.6	97
Recreation	Visitor use	MM RVD's	247.0	227.6	92	233.3	231.1	99
Range	Permitted grazing use	MM AUM's	10.0	10.0	100	10.0	10.0	100
Minerals	Applications, proposals and administration	Cases 3/	22,793.0	27,310.0	120	20,303	28,028	138
Intermediate output 4/								
Timber	Reforestation	M acres	469.0	376.0	80	464.8	385.8	83
	Timber stand improvement	M acres	408.0	361.5	89	393.0	379.1	96
Wildlife	Habitat improvement	M acres	626.0 7/	365.9 8/	58	517.2 7/	364.7 8/	71
Wilderness	Maintenance	MM acres	41.0	25.2 9/	61	38.3	25.2	66
Soil and water	Resource improvement	M acres	32.0	8.9 10/	28	24.5	12.3 11/	50
Trails	Construction/ reconstruction	Miles	2,238.0	528.0	24	1,841.5	412.8	22
Roads	Construction/ reconstruction 12/	Miles	13,416	7,650	57	13,083	8,711	67
Fire	Fuel management	M Acres	333.0	206.6 13/	62	283.3	300.2	106
Lands	Purchase and donation	M acres	205.0	22.8	11	174.0	74.0	43

1/ M = thousand, MM = million, B = billion.
2/ Final output = Forest and rangeland goods and services purchased or consumed by the private sector or individual consumers.
3/ Reported as operating plans in the RPA.
4/ Intermediate output = Work performed by the Forest Service which contributes to the production of final outputs.
5/ Increased accomplishment due to 65,500 acres of site prep done in 1983 with Emergency Jobs Program Funds.
6/ K-V = Knutson Vandenberg Act.
7/ RPA goal for 1984 was 3,130 acre equivalents, which is approximately 626 acres, the RPA 1981-84 average was 2,586 acre equivalents which is approximately 517.2 acres.
8/ Includes 170,047 acres accomplished with Knutson-Vandenberg funds in 1984, and a 1981-84 average of 115,940 acres.
9/ Does not include 6.9 million acres added to the Wilderness Preservation System by the 98th Congress, after October 1, 1984.
10/ Includes 2,733 acres accomplished with K-V and other funds in 1984.
11/ Average for 1982-84; 1981 data not available. Includes a 1982-84 average of 4,677 acres accomplished with K-V and other funds.
12/ Total Forest Service road construction/reconstruction using purchaser construction, purchaser elect, and appropriated funds.
13/ In 1984, an additional 1,506 acres were accomplished through human resouce programs and 315,175 acres using brush disposal funds. In 1981-84, the average was 9,394 acres accomplished through human resource programs and 337,276 using brush disposal funds.

Table 14—Draft and final forest plan environmental impact statements filed with the Environmental Protection Agency by Region as of September 30, 1984

Northern Region	Rocky Mountain Region	Southwestern Region	Intermountain Region
Drafts	Drafts	Drafts	Drafts
Flathead(MT) 1/	Rio Grande(CO)	Coronado(AZ) 3/	Targhee(ID)
Lewis & Clark(MT) 1/	Nebraska(NB)	Tonto(AZ) 2/	Caribou(ID)
Beaverhead(MT) 2/	Bighorn(WY)	Carson(NM) 2/	Wasatch-Cache(UT)
Bitterroot(MT) 2/		Cibola(NM)	
Custer(MT) 2/	Final		Final
Gallatin(MT) 2/			
Lolo(MT) 2/	Arapaho-Roosevelt(CO) 3/		Unita(UT)
Helena(MT) 2/	Grand Mesa, Uncompagre, and Gunnison(CO) 3/		
Nezperce(MT) 2/	Routt(CO) 3/		
Clearwater(ID) 2/	San Juan(CO) 3/		
Idaho Panhandle(ID) 2/	Black Hills(SD) 3/		
Deerlodge(MT) 2/	White River(CO)		
	Pike-San Isabel(CO)		

Pacific Northwest Region	Pacific Southwest Region	Southern Region	Eastern Region
Draft	Draft	Draft	Draft
None	Cleveland(CA) 2/	Natahala-Pisgah(NC)	Hoosier(IN)
	Angeles(CA) 2/	Kisatchie(LA)	Nicolet(WS)
		Francis-Marion(SC)	White Mountain(NH-ME)
		Chattahoochee-Oconee(GA)	Superior(MN)
Alaska Region		George Washington(VA)	Chippewa(MN) 2/
		Sumpter(SC)	Monongahela(WV) 2/
Final		Daniel Boone(KY) 2/	Huron-Manistee(MI) 2/
		Quachita(AR) 2/	Mark Twain(MO) 2/
Chugach(AK)		Ozark-St. Francis(AR) 2/	Allegheny(PA) 2/
		Flordia(FL) 2/	
		Mississippi(MS) 2/	
		Carribbean(PR) 2/	
		Jefferson(VA) 2/	
		Cherokee(TN) 2/	

1/ Supplements or revised drafts resulting from RARE II reevaluation.
2/ Cleared for publication, but not yet printed/released.
3/ Filed before fiscal year 1984.

Table 15—Planned and approved minerals cases by Region—fiscal year 1984

Region	Cases		
	RPA goal	Planned	Accomplished
Northern	3,207	3,880	4,007
Rocky Mountain	1,745	2,131	3,275
Southwestern	1,569	1,658	2,155
Intermountain	2,800	3,157	3,280
Pacific Southwest	1,350	1,532	1,812
Pacific Northwest	7,010	4,500	4,608
Southern	3,487	2,960	3,401
Eastern	1,400	2,021	3,873
Alaska	225	842	899
Total	**22,793**	**22,681 1/**	**27,310**

1/ 20,378 was original 1984 target allocation.

Table 16—Energy mineral workload and production—fiscal years 1980-84

Fiscal year	Acres under lease	Energy-related cases	Energy-related cases in inventory	Oil production	Gas production	Coal production
	Millions			Barrels	1,000 cubic feet	Short tons
1980	25.0	13,980	7,300	12,200,000	213,800,000	7,100,000
1981	25.2	15,037	5,200	13,350,000	214,100,000	12,400,000
1982	25.0	16,380	7,200	13,000,000	214,000,000	13,000,000
1983	34.4	15,940	4,400	13,000,000	205,000,000	14,300,000
1984 1/	**34.0**	**13,103**	**2,805 2/**	**12,000,000**	**205,000,000**	**15,100,000**

1/ All figures are estimated.
2/ Estimate includes 1,386 unprocessed lease applications in wilderness study areas, RARE II recommended wilderness areas, and RARE II further planning areas.

Table 17—Land acquisition and exchange—fiscal year 1984

	Acres	Cases	Value
			Million dollars
Purchase	20,577	369	$ 40.8
Exchange	185,849	150	136.4
Donation	2,204	25	0.9
Total	208,630	544	$178.1

Table 18—Miles of landline location by Region—fiscal year 1984

Region	Total boundary	1984 accomplishment	Accomplished to date
Northern	30,664	540	4,208
Rocky Mountain	51,433	440	2,767
Southwestern	19,991	380	4,866
Intermountain	28,659	432	2,933
Pacific Southwest	29,577	1,296	6,761
Pacific Northwest	25,627	1,465	9,622
Southern	42,280	1,145	32,371
Eastern	42,642	1,002	5,142
Alaska 1/	1,536	108	731
Total	272,409	6,808	69,401

1/ Does not reflect changes due to Alaska Native Claims Settlement Act of 1971 (85 Stat. 688), as amended, and the Alaska Statehood Act of 1958 (72 Stat. 339), as amended. Because the land selections are overlapping and/or in a constant state of change, the Region is not keeping track of the boundary changes at this time.

Table 19—Lands administered by the Forest Service as of September 30, 1984

State, Commonwealth, or Territory 1/	National Forests, purchase units, research areas, and other areas	National Grasslands	Land Utilization Projects	Total
		Acres		
Alabama	646,276	0	40	646,316
Alaska	22,938,652	0	0	22,938,652
Arizona	11,269,406	0	0	11,269,406
Arkansas	2,480,447	0	0	2,480,447
California	20,437,936	0	19,222	20,457,158
Colorado	13,817,859	611,930	560	14,430,349
Connecticut	24	0	0	24
Florida	1,099,109	0	0	1,099,109
Georgia	863,139	0	9,340	872,479
Hawaii	1	0	0	1
Idaho	20,385,566	47,658	0	20,433,224
Illinois	261,592	0	0	261,592
Indiana	188,251	0	284	188,535
Kansas	0	108,177	0	108,177
Kentucky	674,266	0	0	674,266
Louisiana	597,933	0	0	597,933
Maine	50,977	0	260	51,237
Michigan	2,762,633	0	999	2,763,632
Minnesota	2,803,653	0	0	2,803,653
Mississippi	1,148,591	0	0	1,148,591
Missouri	1,456,384	0	13,104	1,469,488
Montana	16,796,703	0	0	16,796,703
Nebraska	257,404	94,332	0	351,736
Nevada	5,150,156	0	0	5,150,156
New Hampshire	705,674	0	0	705,674
New Mexico	9,188,837	136,412	240	9,325,489
New York	13,232	0	0	13,232
North Carolina	1,216,239	0	0	1,216,239
North Dakota	796	1,104,819	0	1,105,615
Ohio	177,949	0	0	177,949
Oklahoma	248,965	46,300	0	295,265
Oregon	15,491,592	105,224	856	15,597,672
Pennsylvania	510,633	0	0	510,633
Puerto Rico	27,846	0	0	27,846
South Carolina	610,736	0	0	610,736
South Dakota	1,134,185	862,871	0	1,997,056
Tennessee	625,604	0	0	625,604
Texas	665,114	117,542	0	782,656
Utah	8,045,363	0	0	8,045,363
Vermont	295,109	0	0	295,109
Virgin Islands	147	0	0	147
Virginia	1,634,062	0	0	1,634,062
Washington	9,055,485	0	738	9,056,223
West Virginia	974,505	0	0	974,505
Wisconsin	1,504,241	0	160	1,504,401
Wyoming	8,682,125	571,885	0	9,254,010
Total	186,895,397	3,807,150	45,803	190,748,350

1/ States not listed have no lands administered by the Forest Service.

Table 20—Fuels treatment acreage accomplished by appropriation—fiscal year 1984

Region	RPA goal	Accomplishment			Total
		Forest fire protection funds	Volunteer and Contributed work	Brush disposal funds	
Northern	33,100	6,332	145	35,287	**41,764**
Rocky Mountain	41,300	10,117	192	5,441	**15,750**
Southwestern	47,400	28,227	0	44,986	**73,213**
Intermountain	19,200	9,300	20	31,262	**40,582**
Pacific Southwest	45,000	67	793	42,797	**43,657**
Pacific Northwest	37,700	25,111	322	152,163	**177,596**
Southern	105,500	123,668	0	0	**123,668**
Eastern	3,500	3,807	88	3,214	**7,109**
Alaska	0	0	0	25	**25**
Total	332,700	206,629	1,560	315,175	**523,364**

Table 21—Timber offered, sold, and harvested—fiscal years 1980-84

	1984 1/	1983	1982	1981	1980
Offered:					
Volume (billion board feet)	**11.9**	11.3	11.1	12.2	12.4
Sold:					
Number of sales 2/	**342,964**	235,585	143,723	92,041	89,304
Volume (billion board feet)	**10.7**	11.1	10.0	11.5	11.3
Value (million dollars) 3/	**698.7**	774.4	614.2	1,767.7	1,948.7
Harvested:					
Volume (billion board feet)	**10.5**	9.2	6.7	8.0	9.2
Value (million dollars) 4/	**759.6**	649.6	339.7	720.9	730.2

1/ Preliminary.
2/ This is the number of sales that can be converted to board feet. Not included are 206,869 sales of nonconvertible product sales.
3/ This is the high bid value from all sales sold and includes stumpage, cost of reforestation, stand improvement, and timber salvage. Does not include value of roads or brush disposal.
4/ This is the current stumpage rate for the actual volume harvested and includes the reforestation and stand improvement costs and timber salvage. Does not include value of roads or brush disposal.

Table 22—Timber offered, sold, and harvested by Region—fiscal years 1982-84

	1984			1983			1982		
	Offered 1/	Sold 2/	Harvested 3/	Offered 1/	Sold 2/	Harvested 3/	Offered 1/	Sold 2/	Harvested 3/
	Million board feet								
Northern	1,102.5	917.1	968.5	1,079.8	1,125.2	947.5	1,027.8	974.0	716.6
Rocky Mountain	495.4	414.0	339.5	375.9	338.2	306.2	389.8	351.5	250.0
Southwestern 4/	510.8	363.4	387.3	457.4	413.7	318.0	377.5	331.2	176.2
Intermountain 4/	457.9	396.1	380.1	428.0	370.4	361.8	413.6	348.0	261.6
Pacific Southwest	1,734.8	1,457.7	1,657.5	1,736.1	1,865.5	1,490.3	1,638.6	1,588.4	918.5
Pacific Northwest	4,925.7	4,962.1	4,538.9	4,746.3	4,915.6	3,868.2	4,856.8	4,641.6	2,525.4
Southern	1,423.5	1,324.9	1,275.4	1,309.6	1,318.6	1,096.0	1,201.6	1,124.9	816.3
Eastern 4/	810.4	774.1	740.0	681.3	632.2	604.5	689.6	589.4	609.5
Alaska 4/	477.5	52.3	261.5	469.0	82.0	251.5	522.5	80.6	473.2
TOTAL 5/	11,938.5	10,661.7	10,548.7	11,283.4	11,061.4	9,244.0	11,117.8	10,029.6	6,747.3

1/ Sales volume offered for the first time.
2/ Does not include the volume of long-term sales released for harvesting. Includes miscellaneous small sales that were previously offered and/or sold and were reoffered and sold in the fiscal year being displayed.
3/ Includes the volume harvested on long-term sales.
4/ Includes long-term sales volume prepared in the offered column.
5/ Columns may not add due to rounding.

Table 23—Number of sales, volume, and value of timber sold on National Forest lands by size class—fiscal years 1980–84

	Sale Size Class							
	To $300	$301-$2,000	$2,001-2,000MBF 1/	2,001-5,000MBF	5,001-15,000MBF	15,001MBF and over	Nonconvertibles 2/	Total Less Nonconvertibles 3/
1980								
Number of Sales	81,072	4,715	2,252	590	596	79	183,360	89,304
Volume (MBF)	406,276	569,131	1,494,286	1,764,723	5,421,220	1,634,396	0	11,290,032
Value ($1,000)	3,175.5	10,126.5	125,231.0	220,310.8	1,254,629.7	335,184.5	1,256.7	1,948,658.0
1981								
Number of Sales	84,675	3,952	2,114	556	640	104	213,091	92,041
Volume (MBF)	359,040	427,385	1,314,813	1,791,408	5,602,699	1,961,455	0	11,456,800
Value ($1,000)	2,913.2	8,823.3	113,111.7	206,064.3	1,077,314.0	359,522.8	1,624.1	1,767,749.4
1982								
Number of Sales	131,498	8,805	2,223	605	500	92	216.9	143,723
Volume (MBF)	441,078	415,776	1,358,642	1,881,008	4,266,677	1,666,455	0	10,029,636
Value ($1,000)	3,580.3	8,365.4	82,587.9	139,849.1	292,693.0	87,112.2	1,755.2	614,187.9
1983								
Number of Sales	226,181	5,684	2,499	574	563	84	214,429	235,585
Volume (MBF)	769,628	455,864	1,483,998	1,896,965	4,888,337	1,566,605	0	11,061,397
Value ($1,000)	5,081.3	9,116.0	97,819.5	132,413.9	421,334.7	108,605.1	1,715.7	774,370.5
1984								
Number of Sales	**330,252**	**8,693**	**2,834**	**619**	**555**	**53**	**206,869**	**343,006**
Volume (MBF)	**903,189**	**379,271**	**1,634,609**	**2,085,355**	**4,711,844**	**947,429**	**0**	**10,661,698**
Value ($1,000)	**5,599.1**	**7,262.7**	**103,076.2**	**149,605.1**	**372,807.1**	**60,368.0**	**1,581.7**	**698,718.2**

1/ MBF = Thousand board feet
2/ Non-convertible products include Christmas trees, cones, burls, et cetera.
3/ May not add due to rounding.

Table 24—Timber sold and harvested by State—fiscal year 1984

State or Commonwealth 2/	Timber sold			Timber harvested 3/	
	Sales	Volume MBF 6/	Value 4/ 1,000 dollars	Volume 5/ MBF	Value 4/ 1,000 dollars
Alabama	230	87,366	7,553,258	81,511	6,797,073
Alaska	96	52,316	1,001,090	261,522	4,865,340
Arizona	19,876	242,677	12,344,804	248,781	11,548,011
Arkansas	4,898	199,944	13,168,397	192,012	17,391,704
California	79,919	1,471,014	99,364,752	1,662,343	134,718,705
Colorado	30,586	255,369	2,717,792	156,275	1,429,309
Florida	107	104,250	8,313,689	128,260	8,125,452
Georgia	393	57,136	3,214,835	53,030	3,353,083
Idaho	34,249	693,008	23,667,749	672,331	23,223,117
Illinois	85	14,688	236,294	8,564	201,236
Indiana	291	13,142	804,782	9,643	485,210
Kentucky	918	39,639	960,868	28,460	510,360
Louisiana	736	166,440	11,836,642	130,397	14,249,517
Maine	9	1,501	39,204	4,753	111,375
Michigan	982	214,347	3,054,723	207,895	3,933,987
Minnesota	464	155,952	1,589,697	161,290	2,102,937
Mississippi	711	209,011	21,433,664	199,526	22,212,583
Missouri	3,786	72,472	2,756,841	70,668	2,154,253
Montana	12,641	478,123	14,440,309	535,627	21,265,847
Nebraska	84	926	9,691	531	1,158
Nevada	1,632	2,192	27,450	5,942	39,656
New Hampshire	48	36,485	747,758	29,937	708,848
New Mexico	21,954	120,692	1,629,633	138,469	2,642,973
New York	41	474	27,672	408	34,333
North Carolina	700	75,604	2,288,005	60,452	1,452,839
North Dakota	28	46	797	82	1,019
Ohio	228	8,298	434,092	11,594	475,577
Oklahoma	264	31,917	1,874,230	30,513	2,476,995
Oregon	44,818	3,563,113	339,204,329	3,259,469	345,817,821
Pennsylvania	184	72,687	10,208,464	58,147	6,993,149
South Carolina	415	106,786	10,283,538	123,724	11,841,615
South Dakota	134	70,202	1,565,187	97,657	1,662,591
Tennessee	586	38,700	1,353,188	32,240	554,729
Texas	726	128,914	10,533,953	157,628	15,153,961
Utah	28,294	95,688	1,060,127	79,048	845,594
Vermont	235	15,378	330,892	11,305	300,324
Virginia	1,585	76,096	1,059,021	54,240	669,502
Washington	35,513	1,392,787	81,849,280	1,289,991	84,480,862
West Virginia	1,013	28,609	1,350,813	28,075	744,201
Wisconsin	230	143,124	2,786,367	141,204	2,174,083
Wyoming	13,317	124,586	1,594,326	125,145	1,826,269
Total 7/	343,006	10,661,698	698,718,203	10,548,687	759,577,198

1/ Excludes nonconvertible products such as Christmas trees, cones, burls, et cetera.
2/ States not listed had no timber sold or harvested in fiscal year 1984.
3/ Preliminary.
4/ Includes Knutson-Vandenberg and salvage sale receipts. Does not include brush disposal and road costs.
5/ Included in volume harvested are adjustments for fiscal year 1983.
6/ MBF = thousand board feet.
7/ Columns may not add due to rounding.

Table 25--Values, costs, and associated outputs for fiscal year 1984 timber sale program

		Regions 1/									
	Units 2/	Northern	Rocky Mountain	South Western	Inter-Mountain	Pacific South-west	Pacific North-west	Southern	Eastern	Alaska 3/	Total 4/
Value of products sold 5/	$MM	33.2	5.5	14.4	7.3	98.9	421.9	94.0	24.4	1.8	701.4
Associated outputs and values 6/											
Wildlife and Fish	MMWFUD	0.6	0.3	0.2	0.2	0.7	2.8	0.6	0.4	0.2	5.9
	$MM	12.8	6.1	5.0	4.5	12.8	62.9	11.8	8.0	4.1	128.0
Recreation	MMRVD	2.5	1.1	1.0	1.0	2.7	11.5	2.5	1.5	0.8	24.7
	$MM	11.1	6.3	4.9	4.8	14.3	67.7	13.0	11.0	4.3	137.4
Range	MAUM	15.2	6.9	6.3	6.0	17.0	71.4	15.6	9.6	--	148.0
	$MM	0.2	0.1	0.1	0.1	0.2	0.8	0.1	0.1	--	1.6
Free-use fuelwood	MMBF	59.7	45.4	135.0	48.8	22.9	76.2	125.5	50.8	6.1	570.4
	MUsers	16.4	17.9	48.7	16.9	10.7	24.3	53.8	15.3	3.6	207.6
	$MM	0.1	0.3	0.6	0.3	0.2	0.3	0.7	0.1	0.8	2.6
Costs of production 7/	$MM	34.5	12.0	12.8	15.1	52.0	109.8	35.1	21.7	10.7	303.8
Net (value less cost)	$MM	22.9	6.3	12.2	1.9	74.4	443.8	84.5	21.9	0.3	667.2
Roads 8/	$MM	40.9	18.0	9.6	10.6	45.1	92.7	39.0	17.7	20.0	293.5

1/ Data are for National Forests and Grasslands only. Does not include Regional office or Washington office costs.

2/ $MM = million dollars, MMWFUD = million wildlife/fish user days, MMRVD = million recreation visitor days, MAUM = thousand animal unit months, MMBF = million board feet, M Users = thousand users.

3/ Includes the timber sale program for the Tongass National Forest as directed by the Alaska National Interest Land Conservation Act, December 2, 1980.

4/ May not add due to rounding.

5/ This is the value of sawtimber, pulp, poles, and miscellaneous products such as posts, fuelwood, and Christmas trees. It does not include road values (purchaser credit or purchaser elected roads) or brush disposal, but does include K-V and salvage sale fund collections. The total value sold includes nonconvertible product value (approx. $1.6 million) and the value of the long-term sale volume released (approx. $1.1 million). These values are not included in Tables 23 and 24.

6/ These represent total quantities of selected outputs associated with the annual timber program, based on constant per-MMBF relationships in the 1985 RPA data base, current management alternative. These are the best estimates of field managers. Values per unit output are based on those published in Table F.2, adjusted to 1984 terms, of the Draft Environmental Impact Statement for 1985 Resources Planning Act Program, except free-use fuelwood which is estimated annually by field managers. A Forest Service task force is currently studying the assignment of such associated outputs, costs, and benefits to the timber program.

7/ These are National Forest costs of producing sawtimber, pulp, poles, and miscellaneous products. This includes: timber management planning, silvicultural examination, sale preparation, harvest administration, salvage sale activities, resource support to timber and K-V reforestation and TSI. Not included are general administration, timber management support to other resources, and road costs.

8/ Roads are considered capital assets that have a cost and a value. Included are Forest Service appropriated, purchaser credit, and purchaser elected road construction, and all engineering support expenditures.

Table 26—Uncut timber volume under contract by Region—fiscal years 1980-84

Region	1984	1983	1982	1981	1980
			Million board feet 1/		
Northern	**3,986**	3,845	3,634	3,325	3,194
Rocky Mountain	**1,227**	1,130	1,157	1,057	1,034
Southwestern	**1,125**	1,320	1,150	995	846
Intermountain	**1,004**	949	890	750	942
Pacific Southwest	**6,975**	7,278	6,563	5,884	5,835
Pacific Northwest	**18,336**	18,695	18,125	16,295	14,446
Southern	**2,870**	2,296	2,296	1,988	1,910
Eastern	**1,909**	1,802	1,917	1,937	1,945
Alaska	**460**	456	365	440	344
Total	**37,892**	37,771	36,097	32,671	30,496

1/ Volume in local scale. Long-term sales not included. Long-term sales volume under contract in fiscal year 1983 was 7,402 million board feet, and 7,112 million board feet in 1984.

Table 27—Timber funding—fiscal years 1982-84

	1984	1983	1982
		1,000 dollars	
National Forest System			
Timber management	141,912	129,334	114,400
Harvest administration	45,635	32,791	44,100
Timber support to other programs	-8,354	-3,785	-3,650
Subtotal	179,193	158,340	154,850
Support to timber sales program			
Mineral	939	1,189	1,200
Landline location	22,103	18,944	18,400
Forest Fire Protection	4,051	3,754	2,700
Road Maintenance	31,933	39,447	35,900
Recreation	8,346	6,147	8,300
Wildlife and Fish	8,410	6,954	4,500
Range	889	486	500
Soil and Water	8,523	6,609	5,500
Subtotal	85,194	83,530	77,000
Road construction			
Forest Service construction	210,620	189,601	212,800
Purchaser construction	(240,000)	(240,000)	(242,542)
Purchaser construction by the Forest Service	50,475	44,900	40,200
Subtotal	261,095	234,501	253,000
Total, appropriated accounts	525,482	476,371	484,850
Special accounts			
Brush disposal	48,300	47,844	29,588
Timber salvage sales	12,775	14,106	6,822
Tongass timber supply fund	41,083	42,520	42,000
Subtotal	102,158	104,470	78,410
Total 1/	627,640	580,841	563,260

1/ Includes Oregon and California (O&C) Grant Land Funding.

Table 28—Reforestation funding and accomplishments by funding source—fiscal years 1980-84

	Appropriated 1/	Knutson-Vandenberg	Total
1980			
Million dollars 2/	69.7	70.0	139.7
1,000 acres	229.4	204.6	434.0
Constant dollars/acre	303.8	342.1	321.9
1981			
Million dollars 2/	68.1	62.0	130.1
1,000 acres	217.9	204.8	422.7
Constant dollars/acre	312.5	302.7	307.8
1982			
Million dollars 2/	63.1	67.9	131.0
1,000 acres	221.6	161.2	382.8
Constant dollars/acre	284.7	421.2	342.2
1983			
Million dollars 2/	76.9 3/	68.8	145.7
1,000 acres	193.2 3/	168.5	361.7
Constant dollars/acre	398.0	408.3	402.8
1984			
Million dollars 2/	44.4	68.9	113.3
1,000 acres	180.7 4/	195.3	376.0
Constant dollars/acre	245.7	352.8	301.3

1/ Does not include funds for nursery and tree improvement.
2/ All dollars are constant 1984. Appropriated funding amounts in 1980 and 1981 include general administration; other years do not.
3/ Does not include 65,500 acres of site preparation for planting in fiscal year 1984, as well as 14,500 acres of site preparation for natural regeneration accomplished with $15 million of Federal Emergency Jobs Program funds, P.L. 98-8.
4/ Increased accomplishments and reduced costs were due to the 65,500 acres of advanced site preparation work as a result of the Federal Emergency Jobs Program in fiscal year 1983.

Table 29—Reforestation program needs—fiscal years 1984-1986

	Backlog	Current or anticipated	Total	Annual program appropriated funds 1/	
	1,000 acres			1,000 acres	Million dollars
10/1/83 balance	223	790	1,013		
Fiscal year 1984:					
New needs 2/	0	+384	+384		
Adjustments 3/	-87	-112	-199		
Accomplishments	-23	-353	-376	180.7	44.4
10/1/84 balance	113	709	822		
Fiscal year 1985:					
New needs	0	+425	+425		
Projected accomplishments	-35	-342	-377	161	53.6
10/1/85 balance	78 4/	792	870		
Fiscal year 1986:					
New Needs	0	+450	+450		
Adjustments	-78 4/	+78 4/	0		
Projected accomplishments	0	-331	-331	130	46.8
10/1/86 balance	0	989	989 5/		

1/ Includes Reforestation Trust Fund pursuant to P.L. 96-451, as amended.
2/ New needs are the results of timber harvests, regeneration failures, and natural disasters such as fires, storms, insects, and diseases.
3/ The adjustments include acres regenerated through natural stocking and reduced by management decision (land classification, multiple use, wilderness designation, and land use decisions).
4/ These 78,000 acres have not gone through the Forest planning process, but are currently uneconomical to plant or are within designated RARE II areas. They will be included in current needs if the Forest planning process includes the acres in the timber base. If the acres remain in the timber base, they will be treated when feasible.
5/ This represents three years of future accomplishments which is the desirable working inventory.

Table 30—Reforestation needs as of October 1, 1984, by State, Forest, and site productivity class

State, Commonwealth, or Territory 1/ National Forest	Acres by site productivity class 2/ 20-49	50-84	85-119	120+	Total acres
Alabama					
Alabama	0	1,816	4,210	690	6,716
Alaska					
Chugach	18	82	20	0	120
Tongass-Chatham	0	0	1,727	937	2,664
Tongass-Ketchikan	0	0	0	16,268	16,268
Tongass-Stikine	0	0	1,230	3,262	4,492
Subtotal	18	82	2,977	20,467	23,544
Arizona					
Apache-Sitgreaves	900	2,021	0	0	2,921
Coconino	0	9,599	0	0	9,599
Kaibab	464	2,238	0	0	2,702
Prescott	0	213	0	0	213
Tonto	67	1,613	0	0	1,680
Subtotal	1,431	15,684	0	0	17,115
Arkansas					
Ouachita	216	27,207	3,089	0	30,512
Ozark and St. Francis	0	4,434	1,108	0	5,542
Subtotal	216	31,641	4,197	0	36,054
California					
Angeles	0	519	0	0	519
Cleveland	291	0	0	0	291
Eldorado	30	758	1,091	839	2,718
Inyo	110	639	0	0	749
Klamath	4,241	5,226	6,491	1,456	17,414
Lassen	0	619	1,187	757	2,563
Los Padres	170	181	60	6	417
Mendocino	40	1,105	1,557	50	2,752
Modoc	0	3,768	0	0	3,768
Plumas	55	5,726	1,038	560	7,379
Rogue River	0	688	37	0	725
San Bernardino	191	344	161	0	696
Sequoia	314	2,548	1,856	935	5,653
Shasta-Trinity	0	7,877	8,758	3,140	19,775

See footnotes at end of table.

Table 30—Reforestation needs as of October 1, 1984, by State, Forest, and site productivity class—Continued

State, Commonwealth, or Territory 1/ National Forest	Acres by site productivity class 2/ 20-49	50-84	85-119	120+	Total acres
Sierra	0	1,519	1,315	882	3,716
Siskiyou	0	0	738	0	738
Six Rivers	0	0	1,957	1,680	3,637
Stanislaus	0	1,154	2,571	668	4,393
Tahoe	1,887	3,072	2,574	2,521	10,054
Toiyabe	107	1,368	200	0	1,675
Subtotal	7,436	37,111	31,591	13,494	89,632
Colorado					
Arapaho and Roosevelt	0	1,439	0	0	1,439
Grand Mesa, Uncompahgre, and Gunnison	955	1,037	736	0	2,728
Pike and San Isabel	50	610	336	0	996
Rio Grande	0	600	0	0	600
Routt	62	231	178	0	471
San Juan	12,451	5,536	0	0	17,987
White River	311	1,286	0	0	1,597
Subtotal	13,829	10,739	1,250	0	25,818
Florida					
Florida	12,020	7,761	4,487	365	24,633
Georgia					
Chattahoochee and Oconee	0	1,123	3,786	901	5,810
Idaho					
Boise	3,420	6,450	3,887	1,042	14,799
Caribou	0	470	135	0	605
Challis	414	207	0	0	621
Clearwater	8,642	425	5,656	17,816	32,539
Idaho Panhandle	19,472	1,665	17,764	22,578	61,479
Kootenai	0	0	960	366	1,326
Lolo	10	0	0	0	10
Nezperce	5,218	2,493	2,812	3,967	14,490
Payette	181	1,532	3,112	0	4,825
Salmon	3,688	1,210	0	0	4,898
Sawtooth	946	1,201	0	0	2,147
Targhee	0	4,372	0	0	4,372
Subtotal	41,991	20,025	34,326	45,769	142,111

See footnotes at end of table.

Table 30—Reforestation needs as of October 1, 1984, by State, Forest, and site productivity class—Continued

State, Commonwealth, or Territory 1/ National Forest	Acres by site productivity class 2/ 20-49	50-84	85-119	120+	Total acres
Illinois					
Shawnee	200	3,657	400	0	4,257
Indiana					
Hoosier	0	1,064	682	0	1,746
Kentucky					
Daniel Boone	241	2,255	1,500	134	4,130
Louisiana					
Kisatchie	0	227	4,158	8,997	13,382
Maine					
White Mountain	90	200	70	0	360
Michigan					
Hiawatha	1,621	2,028	284	121	4,054
Huron-Manistee	5,972	1,137	0	0	7,109
Ottawa	0	3,300	1,100	0	4,400
Subtotal	7,593	6,465	1,384	121	15,563
Minnesota					
Chippewa	120	970	119	0	1,209
Superior	1,010	6,980	1,010	185	9,185
Subtotal	1,130	7,950	1,129	185	10,394
Mississippi					
Mississippi	93	1,756	6,943	11,743	20,535
Missouri					
Mark Twain	5,358	6,746	202	0	12,306
Montana					
Beaverhead	500	1,174	41	0	1,715
Bitterroot	3,177	3,163	2,215	152	8,707
Custer	11	0	17	0	28
Deerlodge	229	180	0	0	409
Flathead	1,738	632	99	0	2,469
Gallatin	5,581	1,411	4,677	905	12,574
Helena	3,392	3,179	189	35	6,795
Idaho Panhandle	2,715	2,003	1,289	0	6,007
Kootenai	3,965	5,325	20,280	5,373	34,943
Lewis and Clark	546	1,004	279	4	1,833
Lolo	3,091	3,739	4,516	740	12,086
Subtotal	24,945	21,810	33,602	7,209	87,566

See footnotes at end of table.

Table 30—Reforestation needs as of October 1, 1984, by State, Forest, and site productivity class—Continued

State, Commonwealth, or Territory 1/ National Forest	Acres by site productivity class 2/ 20-49	50-84	85-119	120+	Total acres
Nevada					
Toiyabe	0	128	0	0	128
New Hampshire					
White Mountain	360	790	290	0	1,440
New Mexico					
Carson	2,401	8,090	0	0	10,491
Cibola	1,264	11,569	0	0	12,833
Gila	191	1,142	0	0	1,333
Lincoln	0	101	105	0	206
Santa Fe	0	1,972	0	0	1,972
Subtotal	3,856	22,874	105	0	26,835
North Carolina					
North Carolina	348	3,202	1,481	2,887	7,918
Ohio					
Wayne	2,476	478	401	0	3,355
Oklahoma					
Ouachita	0	1,276	395	559	2,230
Oregon					
Deschutes	2,328	8,539	4,004	440	15,311
Fremont	3,934	3,416	1,031	129	8,510
Malheur	475	2,906	509	0	3,890
Mt. Hood	167	7,632	9,838	935	18,572
Ochoco	1,167	1,526	168	0	2,861
Rogue River	0	2,403	9,198	298	11,899
Siskiyou	827	5,113	1,927	385	8,252
Siuslaw	0	0	0	6,101	6,101
Umatilla	1,435	3,602	2,475	0	7,512
Umpqua	0	74	5,082	1,105	6,261
Wallowa-Whitman	4,399	5,943	2,117	10	12,469
Willamette	4	417	8,300	8,442	17,163
Winema	3,050	79	806	1,553	5,488
Subtotal	17,786	41,650	45,455	19,398	124,289
Pennsylvania					
Allegheny	0	3,646	4,542	0	8,188

See footnotes at end of table.

Table 30—Reforestation needs as of October 1, 1984, by State, Forest, and site productivity class—Continued

State, Commonwealth, or Territory 1/ National Forest	Acres by site productivity class 2/ 20-49	50-84	85-119	120+	Total acres
Puerto Rico					
Caribbean	0	0	629	0	629
South Carolina					
South Carolina	0	705	3,102	3,243	7,050
South Dakota					
Black Hills	558	0	0	0	558
Tennessee					
Cherokee	6	561	317	243	1,127
Texas					
Texas	0	279	4,254	1,020	5,553
Utah					
Ashley	3,261	226	0	0	3,487
Dixie	751	967	0	0	1,718
Fishlake	73	0	116	0	189
Manti-LaSal	0	416	0	0	416
Uinta	0	76	217	0	293
Wasatch	970	146	54	0	1,170
Subtotal	5,055	1,831	387	0	7,273
Vermont					
Green Mountain	228	24	19	0	271
Virginia					
George Washington	1,063	666	413	304	2,446
Jefferson	833	1,147	166	1,876	4,022
Subtotal	1,896	1,813	579	2,180	6,468
Washington					
Colville	248	4,484	1,603	0	6,335
Gifford Pinchot	6,079	8,432	1,272	171	15,954
Idaho Panhandle	0	11	781	459	1,251
Mt. Baker-Snoqualmie	34	690	4,600	2,374	7,698
Okanogan	3,607	979	0	0	4,586
Olympic	0	555	8,396	2,375	11,326
Umatilla	0	390	266	0	656
Wenatchee	39	5,523	2,585	150	8,297
Subtotal	10,007	21,064	19,503	5,529	56,103

See footnotes at end of table.

Table 30—Reforestation needs as of October 1, 1984, by State, Forest, and site productivity class—Continued

State, Commonwealth, or Territory 1/ National Forest	Acres by site productivity class 2/ 20-49	50-84	85-119	120+	Total acres
West Virginia					
George Washington	78	22	84	263	**447**
Monongahela	0	196	1,688	563	**2,447**
Subtotal	**78**	**218**	**1,772**	**826**	**2,894**
Wisconsin					
Chequamegon	191	4,292	54	25	**4,562**
Nicolet	825	2,003	707	393	**3,928**
Subtotal	**1,016**	**6,295**	**761**	**418**	**8,490**
Wyoming					
Bighorn	735	647	0	0	**1,382**
Blackhills	94	0	0	0	**94**
Bridger-Teton	443	2,650	588	0	**3,681**
Medicine Bow	1,626	2,462	0	0	**4,088**
Shoshone	187	0	0	0	**187**
Targhee	0	263	0	0	**263**
Subtotal	**3,085**	**6,022**	**588**	**0**	**9,695**
Total	**163,346**	**290,968**	**221,474**	**146,378**	**822,166**

1/ States not listed had no reforestation needs as of October 1, 1984.
2/ Site productivity class refers to the amount of wood produced in cubic feet per acre per year in a natural unmanaged stand.

Table 31—Timber stand improvement funding and accomplishments by funding source—fiscal years 1980-84

	Appropriated 1/	Knutson-Vandenberg	Total
1980			
Million dollars 2/	47.0	25.3	72.3
1,000 acres	298.9	158.1	457.0
Constant dollars/acre	157.2	160.0	158.2
1981			
Million dollars 2/	37.8	24.1	61.9
1,000 acres	257.0	139.4	396.4
Constant dollars/acre	147.1	172.9	156.2
1982			
Million dollars 2/	24.4	16.1	40.5
1,000 acres	240.2	120.8	361.0
Constant dollars/acre	101.6	133.3	112.2
1983			
Million dollars 2/	35.1 3/	21.1	56.2
1,000 acres	270.6 3/	127.0	397.6
Constant dollars/acre	129.7	166.1	141.3
1984			
Million dollars 2/	**26.1**	**21.9**	**48.0**
1,000 acres	**250.1**	**111.5**	**361.6**
Constant dollars/acre	**104.4**	**196.4**	132.7

1/ All dollars are constant 1984. Appropriated funding amounts in 1980-81 include general administration; other years do not.
2/ Does not include funds for nursery and tree improvement.
3/ Does not include 158,000 acres of timber stand improvement accomplished with $20 million of Federal Emergency Jobs Program funding, P.L. 98-8.

Table 32—Timber stand improvement program needs—fiscal years 1984-86

	Work needs	Annual program, appropriated funds 1/	
	1,000 acres	1,000 acres	Million dollars
10/1/83 balance	1,588		
Fiscal year 1984:			
New needs	+321		
Accomplishments	-362	250.1	26.1
10/1/84 balance	1,547		
Fiscal year 1985:			
New needs	+400		
Projected accomplishments	-350	218	31.3
10/1/85 balance	1,597		
Fiscal year 1986:			
New needs	400		
Projected accomplishments	-310	173	24.7
10/1/86 balance	1,687 2/		

1/ Includes Reforestation Trust Fund pursuant to P.L. 96-451, as amended, through fiscal year 1985.
2/ This represents over four years of future accomplishments.

Table 33—Timber stand improvement needs as of October 1, 1984, by State, Forest, and cubic foot productivity class

State, Commonwealth, or Territory 1/ National Forest	Cubic foot productivity classes 2/ 20-49	50-84	85-119	120+	Total TSI 3/	Release subtotal	Thinning subtotal	Fertilization subtotal	Pruning subtotal
Alabama									
Alabama	0	2,428	3,250	280	5,958	5,958	0	0	0
Alaska									
Chugach	289	78	708	97	1,172	686	486	0	0
Tongass-Chatham	0	40	3,945	198	4,183	2,485	1,698	0	0
Tongass-Ketchikan	0	0	0	36,174	36,174	1,611	34,563	0	0
Tongass-Stikine	0	0	1,421	18,293	19,714	196	19,518	0	0
Subtotal	289	118	6,074	54,762	61,243	4,978	56,265	0	0
Arizona									
Apache-Sitgreaves	23,756	24,518	0	0	48,274	0	48,274	0	0
Coconino	0	41,358	0	0	41,358	0	41,358	0	0
Kaibab	2,958	20,927	0	0	23,885	1,108	22,777	0	0
Prescott	0	56	0	0	56	0	56	0	0
Tonto	3,238	6,992	0	0	10,230	0	10,230	0	0
Subtotal	29,952	93,851	0	0	123,803	1,108	122,695	0	0
Arkansas									
Ouachita	1,200	30,556	4,428	105	36,289	29,266	7,023	0	0
Ozark and St. Francis	0	8,419	2,105	0	10,524	6,586	3,938	0	0
Subtotal	1,200	38,975	6,533	105	46,813	35,852	10,961	0	0
California									
Angeles	0	1,054	0	0	10,54	653	376	25	0
Cleveland	1,220	1,784	0	0	3,004	40	2,964	0	0
Eldorado	24	786	1,802	2,111	4,723	3,790	933	0	0
Inyo	20	2,957	0	0	2,977	165	2,812	0	0
Klamath	5,550	16,817	16,632	6,069	45,068	24,479	20,589	0	0
Lassen	0	2,659	2,399	747	5,805	1,986	3,819	0	0
Los Padres	888	377	140	30	1,435	546	889	0	0
Mendocino	214	4,037	3,912	380	8,543	6,350	2,093	100	0
Modoc	920	23,375	0	0	24,295	14,670	7,948	1,677	0
Plumas	1,964	19,981	9,917	4,578	36,440	21,841	13,544	1,055	0

See footnotes at end of table.

Table 33—Timber stand improvement needs as of October 1, 1984, by State, Forest, and cubic foot productivity class—Continued

State, Commonwealth, or Territory 1/ National Forest	Cubic foot productivity classes 2/ 20-49	50-84	85-119	120+	Total TSI 3/	Release subtotal	Thinning subtotal	Fertilization subtotal	Pruning subtotal
San Bernardino	975	3,198	358	0	4,531	711	3,820	0	0
Sequoia	0	2,343	1,797	2,066	6,206	3,330	2,204	672	0
Shasta-Trinity	0	6,550	17,757	5,318	29,625	26,165	3,329	131	0
Sierra	0	3,132	2,825	1,228	7,185	4,119	3,066	0	0
Siskiyou	0	0	187	0	187	187	0	0	0
Six Rivers	0	647	26,102	19,672	46,421	37,355	8,913	153	0
Stanislaus	63	1,684	6,765	3,174	11,686	10,003	1,683	0	0
Tahoe	6,207	5,383	7,099	15,037	33,726	23,789	9,937	0	0
Toiyabe	4,050	4,516	0	0	8,566	2,462	6,104	0	0
Subtotal	22,095	101,280	97,692	60,410	281,477	182,641	95,023	3,813	0
Colorado									
Arapaho and Roosevelt	69,000	33,749	0	0	102,749	9,051	93,698	0	0
Grand Mesa, Uncompahgre, and Gunnison	2,775	9,855	3,834	0	16,464	10,583	5,881	0	0
Manti-LaSal	0	600	0	0	600	0	600	0	0
Pike and San Isabel	0	1,521	20	0	1,541	795	746	0	0
Rio Grande	3,492	21,119	3,784	0	28,395	16,158	12,237	0	0
Routt	32	150	0	0	182	32	150	0	0
San Juan	4,691	4,269	0	0	8,960	8,023	937	0	0
White River	806	1,612	805	0	3,223	1,178	2,045	0	0
Subtotal	80,796	72,875	8,443	0	162,114	45,820	116,294	0	0
Florida									
Florida	0	5,615	2,403	147	8,165	1,085	0	7,080	0
Georgia									
Chattahoochee and Oconee	0	2,957	4,272	1,555	8,784	7,522	1,262	0	0
Idaho									
Boise	0	16,795	2,577	532	19,904	4,465	15,439	0	0
Caribou	0	620	150	0	770	265	505	0	0
Challis	400	291	0	0	691	0	691	0	0
Clearwater	1,828	163	2,488	8,390	12,869	1,156	11,713	0	0

See footnotes at end of table.

Table 33—Timber stand improvement needs as of October 1, 1984, by State, Forest, and cubic foot productivity class—Continued

State, Commonwealth, or Territory 1/ National Forest	Cubic foot productivity classes 2/ 20-49	50-84	85-119	120+	Total TSI 3/	Release subtotal	Thinning subtotal	Fertilization subtotal	Pruning subtotal
Idaho Panhandle	5,466	2,564	19,877	22,460	**50,367**	14,276	36,091	0	0
Kootenai	0	0	355	248	**603**	488	115	0	0
Nezperce	2,444	448	1,652	341	**4,885**	1,508	3,377	0	0
Payette	361	2,087	3,953	0	**6,401**	1,285	5,116	0	0
Salmon	931	574	0	0	**1,505**	83	1,422	0	0
Sawtooth	60	325	0	0	**385**	260	125	0	0
Targhee	0	749	0	0	**749**	484	265	0	0
Subtotal	**11,490**	**24,616**	**31,052**	**31,971**	**99,129**	**24,270**	**74,859**	**0**	**0**
Illinois									
Shawnee	**142**	**3,917**	**339**	**58**	**4,456**	**2,967**	**1,403**	**0**	**86**
Indiana									
Hoosier	**0**	**5,909**	**3,121**	**0**	**9,030**	**3,653**	**3,041**	**0**	**2,336**
Kentucky									
Daniel Boone	**241**	**5,396**	**4,624**	**1,073**	**11,334**	**7,298**	**4,033**	**3**	**0**
Louisiana									
Kitsatchie	**0**	**0**	**1,224**	**3,156**	**4,380**	**4,059**	**321**	**0**	**0**
Maine									
White Mountain	**90**	**210**	**75**	**0**	**375**	**205**	**170**	**0**	**0**
Michigan									
Hiawatha	445	6,321	2,351	0	**9,117**	1,888	1,229	0	6,000
Huron-Manistee	708	2,804	356	0	**3,868**	2,474	1,394	0	0
Ottawa	0	1,100	300	0	**1,400**	1,400	0	0	0
Subtotal	**1,153**	**10,225**	**3,007**	**0**	**14,385**	**5,762**	**2,623**	**0**	**6,000**
Minnesota									
Chippewa	1,358	1,205	0	0	**2,563**	2,263	0	0	300
Superior	1,022	7,060	1,172	186	**9,440**	8,405	885	0	150
Subtotal	**2,380**	**8,265**	**1,172**	**186**	**12,003**	**10,668**	**885**	**0**	**450**

See footnotes at end of table.

Table 33—Timber stand improvement needs as of October 1, 1984, by State, Forest, and cubic foot productivity class—Continued

State, Commonwealth, or Territory 1/ National Forest	Cubic foot productivity classes 2/ 20-49	50-84	85-119	120+	Total TSI 3/	Release subtotal	Thinning subtotal	Fertilization subtotal	Pruning subtotal
Mississippi									
Mississippi	341	370	233	4,771	5,715	3,838	1,166	711	0
Missouri									
Mark Twain	3,059	7,434	56	0	10,549	6,176	4,254	0	119
Montana									
Beaverhead	1,114	1,185	493	0	2,792	729	2,063	0	0
Bitterroot	2,789	1,535	1,997	24	6,345	834	5,511	0	0
Custer	448	436	93	0	977	12	965	0	0
Deerlodge	4,293	779	45	0	5,117	74	5,043	0	0
Flathead	1,903	1,188	8,352	1,779	1,222	1,638	11,584	0	0
Gallatin	253	2,895	105	110	3,363	241	3,122	0	0
Helena	337	995	1,049	111	2,492	368	2,124	0	0
Idaho Panhandle	30	10	226	184	450	161	289	0	0
Kootenai	3,092	5,942	17,426	6,973	33,433	1,069	32,364	0	0
Lewis and Clark	747	503	159	0	1,409	463	946	0	0
Lolo	3,302	3,739	4,752	392	12,185	937	11,248	0	0
Subtotal	18,308	19,207	34,697	9,573	81,785	6,526	75,259	0	0
Nevada									
Humboldt	25	0	0	0	25	25	0	0	0
New Hampshire									
White Mountain	360	810	305	0	1,475	810	665	0	0
New Mexico									
Carson	12,339	13,626	300	0	26,265	487	25,778	0	0
Cibola	0	16,308	0	0	16,308	0	16,308	0	0
Gila	11,286	55,430	4,840	480	72,036	1,025	71,011	0	0
Lincoln	0	840	217	0	1,057	0	1,057	0	0
Santa Fe	0	31,226	0	0	31,266	0	31,226	0	0
Subtotal	23,625	117,430	5,357	480	146,892	1,512	145,380	0	0
New York									
Green Mountain	68	7	10	0	85	0	85	0	0

See footnotes at end of table.

Table 33—Timber stand improvement needs as of October 1, 1984, by State, Forest, and cubic foot productivity class—Continued

State, Commonwealth, or Territory 1/ National Forest	Cubic foot productivity classes 2/ 20-49	50-84	85-119	120+	Total TSI 3/	Release subtotal	Thinning subtotal	Fertilization subtotal	Pruning subtotal
North Carolina									
North Carolina	80	1,068	1,759	2,188	5,095	3,382	1,417	296	0
Ohio									
Wayne	0	3,592	1,564	0	5,156	1,151	2,547	0	1,458
Oklahoma									
Ouachita	26	2,529	39	335	2,929	1,259	1,670	0	0
Oregon									
Deschutes	5,044	5,890	2,265	799	13,998	4,582	9,416	0	0
Fremont	11,346	3,649	942	0	15,937	1,694	14,243	0	0
Malheur	12,296	5,951	0	0	18,247	240	18,007	0	0
Mt. Hood	6	2,497	7,957	1,415	11,875	245	8,484	3,146	0
Ochoco	4,316	3,260	16	0	7,592	990	6,602	0	0
Rogue River	0	917	13,417	259	14,593	12,058	1,395	1,140	0
Siskiyou	84	3,994	22,961	5,224	32,263	25,342	6,921	0	0
Siuslaw	0	0	0	8,473	8,473	6,291	2,182	0	0
Umatilla	7,520	2,393	240	0	10,153	454	9,699	0	0
Umpqua	25	5,504	17,699	8,779	32,007	7,195	13,946	10,866	0
Wallowa-Whitman	3,765	7,372	2,345	0	13,482	2,769	10,713	0	0
Willamette	82	510	9,539	19,919	30,050	4,123	8,877	17,050	0
Winema	5,136	4,625	740	0	10,501	0	10,501	0	0
Subtotal	49,620	46,562	78,121	44,868	219,171	65,983	120,986	32,202	0
Pennsylvania									
Allegheny	0	667	1,509	0	2,176	0	2,176	0	0
Puerto Rico									
Caribbean	0	0	1,646	0	1,646	1,646	0	0	0
South Carolina									
South Carolina	0	225	2,706	1,669	4,600	1,982	1,118	1,500	0
South Dakota									
Black Hills	2,500	0	0	0	2,500	0	2,500	0	0
Tennessee									
Cherokee	40	2,909	1,583	2,131	6,663	4,154	2,509	0	0

See footnotes at end of table.

Table 33—Timber stand improvement needs as of October 1, 1984, by State, Forest, and cubic foot productivity class—Continued

State, Commonwealth, or Territory 1/ National Forest	Cubic foot productivity classes 2/ 20-49	50-84	85-119	120+	Total TSI 3/	Release subtotal	Thinning subtotal	Fertilization subtotal	Pruning subtotal
Texas									
Texas	0	154	1,248	641	2,043	1,036	933	74	0
Utah									
Ashley	4,087	381	0	0	4,468	246	4,222	0	0
Dixie	1,694	6,491	0	0	8,185	576	7,609	0	0
Fishlake	0	85	80	0	165	0	165	0	0
Manti-LaSal	0	1,717	0	0	1,717	0	1,717	0	0
Uinta	0	0	111	0	111	0	111	0	0
Wasatch	125	219	337	0	681	0	681	0	0
Subtotal	5,906	8,893	528	0	15,327	822	14,505	0	0
Vermont									
Green Mountain	4,490	436	732	0	5,658	1,282	4,330	0	46
Virginia									
George Washington	130	278	110	227	745	532	213	0	0
Jefferson	155	1,149	447	1,147	2,898	1,624	1,274	0	0
Subtotal	285	1,427	557	1,374	3,643	2,156	1,487	0	0
Washington									
Colville	507	3,141	4,519	49	8,216	2,759	5,457	0	0
Gifford Pinchot	189	9,359	20,234	8,936	38,718	406	31,254	7,058	0
Idaho Panhandle	46	0	591	632	1,269	97	1,172	0	0
Mt. Baker-Snoqualmie	0	2,646	6,769	1,924	11,339	512	7,352	3,475	0
Okanogan	2,191	2,193	0	0	4,384	626	3,758	0	0
Olympic	120	570	6,665	2,221	9,576	900	4,878	3,798	0
Umatilla	85	922	0	0	1,007	0	1,007	0	0
Wenatchee	2,176	22,029	1,923	1,040	27,168	5,608	21,560	0	0
Subtotal	5,314	40,860	40,701	14,802	101,677	10,908	76,438	14,331	0

See footnotes at end of table.

Table 33—Timber stand improvement needs as of October 1, 1984, by State, Forest, and cubic foot productivity class—Continued

State, Commonwealth, or Territory 1/ National Forest	Cubic foot productivity classes 2/ 20-49	50-84	85-119	120+	Total TSI 3/	Release subtotal	Thinning subtotal	Fertilization subtotal	Pruning subtotal
West Virginia									
George Washington	0	150	16	40	**206**	40	166	0	0
Monongahela	0	260	2,211	865	**3,336**	2,381	825	0	130
Subtotal	**0**	**410**	**2,227**	**905**	**3,542**	**2,421**	**991**	**0**	**130**
Wisconsin									
Chequamegon	10	806	164	160	**1,140**	940	98	0	102
Nicolet	24	1,421	2,699	208	**4,352**	1,200	90	0	3,062
Subtotal	**34**	**2,227**	**2,863**	**368**	**5,492**	**2,140**	**188**	**0**	**3,164**
Wyoming									
Bighorn	27,767	1,102	0	0	**28,869**	27,640	1,229	0	0
Black Hills	14,340	0	0	0	**14,340**	0	14,340	0	0
Bridger-Teton	0	1,171	1,616	0	**2,787**	0	2,787	0	0
Medicine Bow	3,542	1,608	0	0	**5,150**	1,916	3,234	0	0
Shoshone	6,340	2,186	0	0	**8,526**	0	8,526	0	0
Targhee	0	22	0	0	**22**	0	22	0	0
Wasatch	236	0	0	0	**236**	0	236	0	0
Subtotal	**52,225**	**6,089**	**1,616**	**0**	**59,930**	**29,556**	**30,374**	**0**	**0**
Total	**316,134**	**639,943**	**353,338**	**237,808**	**1,547,223**	**492,611**	**980,813**	**60,010**	**13,789**

1/ States not listed had no timber stand improvement needs as of October 1, 1984.
2/ Cubic foot productivity class refers to the cubic feet of wood produced per acre per year in a natural unmanaged stand.
3/ TSI = timber stand improvement

Table 34—Certification of reforestation and timber stand improvement acreages by State and National Forest—fiscal year 1984

State, Commonwealth, or Territory 1/ National Forest	Planted	Seeded	Natural regen. w/ site prep. 2/	Natural regen. w/o site prep. 2/	Total refor. 2/	Release	Pre-commercial thinning	Fertili-zation	Pruning	Total TSI 2/
Alabama										
Alabama	2,687	0	840	0	3,527	5,958	0	0	0	5,958
Alaska										
Chugach	12	0	0	0	12	0	0	0	0	0
Tongass-Chatham	471	0	0	1,661	2,132	1,411	346	0	0	1,757
Tongass-Ketchikan	0	0	0	72	72	1,544	3,642	0	0	5,186
Tongass-Stikine	0	0	0	3,899	3,899	0	1,789	0	0	1,789
Subtotal	483	0	0	5,632	6,115	2,955	5,777	0	0	8,732
Arizona										
Apache-Sitgreaves	261	0	56	0	317	0	5,773	0	0	5,773
Coconino	1,255	0	0	0	1,255	0	7,631	0	0	7,631
Kaibab	106	0	0	0	106	418	3,451	0	0	3,869
Prescott	0	0	0	0	0	0	117	0	0	117
Tonto	0	0	0	0	0	0	1,933	0	0	1,933
Subtotal	1,622	0	56	0	1,678	418	18,905	0	0	19,323
Arkansas										
Ouachita	8,977	2,623	1,053	0	12,653	11,459	1,250	0	0	12,709
Ozark and St. Francis	3,293	0	2,864	0	6,157	5,966	2,754	0	0	8,720
Subtotal	12,270	2,623	3,917	0	18,810	17,425	4,004	0	0	21,429
California										
Angeles	21	0	66	0	87	7	0	0	0	7
Eldorado	875	0	0	0	875	0	0	0	0	0
Inyo	0	0	0	0	0	50	100	0	0	150
Klamath	1,967	0	0	403	2,370	899	920	0	0	1,819
Lassen	235	0	0	0	235	0	0	0	0	0
Mendocino	348	0	0	0	348	0	0	0	0	0
Modoc	4,976	0	0	0	4,976	0	0	0	0	0

See footnotes at end of table.

Table 34—Certification of reforestation and timber stand improvement acreages by State and National Forest—fiscal year 1984—Continued

State, Commonwealth, or Territory 1/ National Forest	Planted	Seeded	Natural regen. w/ site prep. 2/	Natural regen. w/o site prep. 2/	Total refor. 2/	Release	Pre-commercial thinning	Fertili-zation	Pruning	Total TSI 2/
Plumas	588	0	0	0	588	0	0	0	0	0
San Bernardino	305	0	0	0	305	109	211	0	0	320
Sequoia	491	0	0	0	491	952	4	0	0	956
Shasta-Trinity	7,481	0	0	0	7,481	569	0	0	0	569
Sierra	959	0	0	0	959	0	0	0	0	0
Six Rivers	3,370	0	0	0	3,370	2,829	1,063	0	0	3,892
Stanislaus	537	0	0	0	537	28	263	0	0	291
Tahoe	937	0	0	0	937	462	0	0	0	462
Subtotal	23,090	0	66	403	23,559	5,905	2,561	0	0	8,466
Colorado										
Arapaho and Roosevelt	129	90	417	2,300	2,936	1,449	1,377	0	0	2,826
Grand Mesa, Uncompahgre, and Gunnison	0	0	0	0	0	11	10	0	0	21
Manti-LaSal	0	0	0	0	0	160	0	0	0	160
Pike and San Isabel	0	0	9	0	9	892	511	0	0	1,403
Rio Grande	635	0	0	0	635	0	982	0	0	982
Routt	0	0	0	0	0	3,100	200	0	0	3,300
San Juan	1,775	0	0	1,960	3,735	161	109	0	0	270
White River	105	0	0	0	105	723	292	0	0	1,015
Subtotal	2,644	90	426	4,260	7,420	6,496	3,481	0	0	9,977
Florida										
Florida	4,917	2,925	0	0	7,842	865	196	2,461	0	3,522
Georgia										
Chattahoochee and Oconee	5,651	0	1,517	0	7,168	4,856	298	0	0	5,154
Idaho										
Boise	809	0	19	154	982	1,483	0	0	0	1,483
Challis	0	0	49	0	49	35	288	0	0	323
Clearwater	1,739	0	0	62	1,801	406	982	0	0	1,388
Idaho Panhandle	1,788	0	375	346	2,509	1,193	3,722	0	0	4,915

See footnotes at end of table.

Table 34—Certification of reforestation and timber stand improvement acreages by State and National Forest—fiscal year 1984—Continued

State, Commonwealth, or Territory 1/ National Forest	Planted	Seeded	Natural regen. w/ site prep. 2/	Natural regen. w/o site prep. 2/	Total refor. 2/	Release	Pre-commercial thinning	Fertili-zation	Pruning	Total TSI 2/
Nezperce	1,849	0	0	0	1,849	914	193	0	0	1,107
Payette	447	0	245	0	692	0	0	0	0	0
Salmon	297	0	0	186	483	0	158	0	0	158
Sawtooth	1,538	0	0	153	1,691	188	65	0	0	253
Targhee	2,432	0	2,123	0	4,555	639	0	0	0	639
Subtotal	10,899	0	2,811	901	14,611	4,858	5,408	0	0	10,266
Illinois										
Shawnee	524	0	171	15	710	387	0	0	0	387
Indiana										
Wayne-Hoosier	126	0	9	0	135	281	65	0	0	346
Kentucky										
Daniel Boone	1,741	0	2,248	0	3,989	3,603	616	0	0	4,219
Louisiana										
Kisatchie	3,916	0	735	0	4,651	0	0	0	0	0
Maine										
White Mountain	0	0	200	0	200	133	0	0	0	133
Michigan										
Hiawatha	739	751	2,085	1,346	4,921	1,382	50	0	155	1,587
Huron-Manistee	2,907	0	2,579	2,198	7,684	1,054	10	0	0	1,064
Ottawa	359	0	981	706	2,046	1,590	115	0	0	1,705
Subtotal	4,005	751	5,645	4,250	14,651	4,026	175	0	155	4,356
Minnesota										
Chippewa	1,256	50	3,758	110	5,174	3,317	120	0	29	3,466
Superior	4,591	424	230	981	6,226	2,885	733	0	111	3,729
Subtotal	5,847	474	3,988	1,091	11,400	6,202	853	0	140	7,195

See footnotes at end of table.

Table 34—Certification of reforestation and timber stand improvement acreages by State and National Forest—fiscal year 1984—Continued

State, Commonwealth, or Territory 1/ National Forest	Planted	Seeded	Natural regen. w/ site prep. 2/	Natural regen. w/o site prep. 2/	Total refor. 2/	Release	Pre-commercial thinning	Fertili-zation	Pruning	Total TSI 2/
Mississippi										
Mississippi	7,135	65	2,231	22	9,453	3,365	762	533	0	4,660
Missouri										
Mark Twain	525	417	5,148	65	6,155	5,235	2,708	0	0	7,943
Montana										
Beaverhead	282	0	200	0	482	0	442	0	0	442
Bitterroot	467	0	0	104	571	645	1,049	0	0	1,694
Custer	0	0	0	0	0	239	94	0	0	333
Deerlodge	58	0	510	79	647	10	99	0	0	109
Flathead	1,828	514	435	700	3,477	430	2,001	0	0	2,431
Gallatin	281	0	646	330	1,257	9	509	0	0	518
Helena	328	0	0	0	328	0	113	0	0	113
Kootenai	4,458	182	3,384	1,894	9,918	17	3,776	0	0	3,793
Lewis and Clark	269	0	444	96	809	62	127	0	0	189
Lolo	1,057	63	293	478	1,891	0	1,097	0	0	1,097
Subtotal	9,028	759	5,912	3,681	19,380	1,412	9,307	0	0	10,719
Nevada										
Humboldt	0	0	0	0	0	25	0	0	0	25
New Hampshire										
White Mountain	0	0	790	9	799	550	0	0	0	550
New Mexico										
Carson	469	0	0	0	469	2,336	7,145	0	0	9,481
Cibola	0	0	0	0	0	0	2,219	0	0	2,219
Gila and Apache	1,044	0	0	0	1,044	0	4,914	0	0	4,914
Santa Fe	0	0	0	0	0	0	2,376	0	0	2,376
Subtotal	1,513	0	0	0	1,513	2,336	16,654	0	0	18,990
North Carolina										
North Carolina	2,314	0	1,716	0	4,030	1,827	394	0	0	2,221

See footnotes at end of table.

Table 34—Certification of reforestation and timber stand improvement acreages by State and National Forest—fiscal year 1984—Continued

State, Commonwealth, or Territory 1/ National Forest	Planted	Seeded	Natural regen. w/ site prep. 2/	Natural regen. w/o site prep. 2/	Total refor. 2/	Release	Pre-commercial thinning	Fertili-zation	Pruning	Total TSI 2/
Ohio										
Wayne	83	0	0	0	83	457	132	0	244	833
Oklahoma										
Ouachita	1,541	0	254	0	1,795	957	159	0	0	1,116
Oregon										
Deschutes	9,505	0	396	16	9,917	986	8,021	0	0	9,007
Fremont	106	0	0	0	106	1,096	537	0	0	1,633
Malheur	1,119	0	0	129	1,248	8	3,984	0	0	3,992
Mt. Hood	3,076	15	483	909	4,483	9	2,274	0	0	2,283
Ochoco	10	0	0	0	10	117	1,409	0	0	1,526
Rogue River	3,618	0	202	0	3,820	228	190	0	0	418
Siskiyou	12,953	15	14	2,151	15,133	3,258	2,425	0	0	5,683
Siuslaw	3,533	0	0	0	3,533	418	2,276	0	0	2,694
Umatilla	679	0	0	0	679	211	2,266	176	0	2,653
Umpqua	5,273	0	86	353	5,712	2,715	4,988	983	0	8,686
Wallowa-Whitman	3,676	0	222	546	4,444	405	3,060	0	0	3,465
Willamette	14,322	129	69	261	14,781	665	7,571	2,729	0	10,965
Winema	7,847	0	0	295	8,142	0	5,325	0	0	5,325
Subtotal	65,717	159	1,472	4,660	72,008	10,116	44,326	3,888	0	58,330
Pennsylvania										
Allegheny	0	0	548	154	702	0	291	0	0	291
Puerto Rico										
Caribbean	100	0	0	0	100	1,165	0	0	0	1,165
South Carolina										
South Carolina	3,956	0	784	32	4,772	1,268	1,003	1,631	0	3,902
South Dakota										
Black Hills	0	0	0	0	0	0	2,060	0	0	2,060
Tennessee										
Cherokee	2,366	0	406	0	2,772	2,952	140	0	0	3,092
Texas										
Texas	4,106	0	712	0	4,818	391	1,278	0	0	1,669

See footnotes at end of table.

Table 34—Certification of reforestation and timber stand improvement acreages by State and National Forest—fiscal year 1984—Continued

State, Commonwealth, or Territory 1/ National Forest	Planted	Seeded	Natural regen. w/ site prep. 2/	Natural regen. w/o site prep. 2/	Total refor. 2/	Release	Pre-commercial thinning	Fertili-zation	Pruning	Total TSI 2/
Utah										
Ashley	0	0	0	0	0	135	0	0	0	135
Dixie	419	0	0	0	419	0	2,293	0	0	2,293
Fishlake	0	0	0	0	0	0	119	0	0	119
Manti-LaSal	0	0	0	0	0	465	0	0	0	465
Wasatch	61	0	0	0	61	0	1,590	0	0	1,590
Subtotal	480	0	0	0	480	600	4,002	0	0	4,602
Vermont										
Green Mountain	88	0	997	55	1,140	219	340	0	0	559
Virginia										
George Washington	720	0	2,357	113	3,190	798	318	0	0	1,116
Jefferson	618	0	2,143	0	2,761	1,095	1,421	0	18	2,534
Subtotal	1,338	0	4,500	113	5,951	1,893	1,739	0	18	3,650
Washington										
Colville	1,766	0	0	104	1,870	236	2,481	0	0	2,717
Gifford Pinchot	15,390	0	10	211	15,611	1,197	9,488	3,643	0	14,328
Idaho Panhandle	260	0	60	38	358	0	222	0	0	222
Mt. Baker-Snoqualmie	6,113	0	159	1,170	7,442	70	1,600	848	0	2,518
Okanogan	0	0	221	0	221	796	2,095	0	0	2,891
Olympic	6,890	0	0	142	7,032	217	8,283	3,769	0	12,269
Umatilla	525	0	183	9	717	0	480	0	0	480
Wenatchee	2,437	0	222	21	2,680	853	1,868	27	0	2,748
Subtotal	33,381	0	855	1,695	35,931	3,369	26,517	8,287	0	38,173
West Virginia										
George Washington	121	0	37	29	187	0	92	0	0	92
Monongahela	0	0	0	0	0	753	179	0	0	932
Subtotal	121	0	37	29	187	753	271	0	0	1,024

See footnotes at end of table.

Table 34—Certification of reforestation and timber stand improvement acreages by State and National Forest—fiscal year 1984—Continued

State, Commonwealth, or Territory 1/ National Forest	Planted	Seeded	Natural regen. w/ site prep. 2/	Natural regen. w/o site prep. 2/	Total refor. 2/	Release	Pre-commercial thinning	Fertili-zation	Pruning	Total TSI 2/
Wisconsin										
Chequamegon	298	0	2,718	93	3,109	1,349	60	0	0	1,409
Nicolet	832	0	1,900	100	2,832	1,123	0	0	73	1,196
Subtotal	1,130	0	4,618	193	5,941	2,472	60	0	73	2,605
Wyoming										
Bighorn	483	0	0	0	483	0	0	0	0	0
Black Hills	0	0	0	0	0	0	13,585	0	0	13,585
Bridger-Teton	170	0	0	0	170	0	1,050	0	0	1,050
Medicine Bow	119	0	776	0	895	234	1,859	0	0	2,093
Shoshone	249	0	0	1,600	1,849	300	100	0	0	400
Targhee	41	0	54	2	97	0	0	0	0	0
Subtotal	1,062	0	830	1,602	3,494	534	16,594	0	0	17,128
Total	216,406	8,263	54,439	28,862	307,970	106,264	171,076	16,800	630	294,770

1/ States not listed had no certification in fiscal year 1984.
2/ Regen. = regeneration, w/ site prep. = with site preparation, w/o site prep. = without site preparation, refor. = reforestation, TSI = timber stand improvement.

Table 35—Certification of reforestation and timber stand improvement acreages by Region—fiscal year 1984

Region	Reforestation					Timber stand improvement				
			Natural regeneration							
	Plant	Seed	With site preparation	Without site preparation	Total	Release	Precommercial thinning	Fertilization	Pruning	Total
Northern	14,664	759	6,347	4,127	**25,897**	3,925	14,426	0	0	**18,351**
Rocky Mountain	3,495	90	1,202	5,860	**10,647**	6,870	21,085	0	0	**27,955**
Southwest	3,135	0	56	0	**3,191**	2,754	35,559	0	0	**38,313**
Intermountain	6,214	0	2,490	495	**9,199**	3,130	5,563	0	0	**8,693**
Pacific Southwest	23,090	0	66	403	**23,559**	5,905	2,561	0	0	**8,466**
Pacific Northwest	98,838	159	2,267	6,317	**107,581**	13,485	70,621	12,175	0	**96,281**
Southern	54,159	5,613	19,897	196	**79,865**	46,525	10,681	4,625	18	**61,849**
Eastern	12,328	1,642	22,114	5,832	**41,916**	20,715	4,803	0	612	**26,130**
Alaska	483	0	0	5,632	**6,115**	2,955	5,777	0	0	**8,732**
Total	216,406	8,263	54,439	28,862	**307,970**	106,264	171,076	16,800	630	**294,770**

Table 36—Total recreation use on National Forest System lands by State—fiscal years 1980-84

State, Commonwealth, 1/ Territory	1984	1983	1982	1981	1980
			1,000 RVD's 2/		
Alabama	1,053.7	1,048.0	1,272.0	1,196.0	1,252.1
Alaska	3,519.6	4,144.0	3,571.4	3,219.7	2,908.2
Arizona	16,376.7	16,557.0	16,912.6	17,830.5	17,744.9
Arkansas	2,251.3	2,292.9	2,543.0	2,417.5	2,509.0
California	55,476.3	53,137.1	55,243.8	54,889.7	57,533.1
Colorado	20,734.9	20,037.9	22,361.7	23,068.4	22,448.7
Florida	2,630.0	3,054.0	2,976.9	3,028.3	3,273.9
Georgia	2,275.6	2,271.5	2,182.8	2,110.8	2,196.4
Idaho	10,505.9	10,117.0	10,610.8	11,259.9	10,797.3
Illinois	801.4	799.0	836.1	823.9	839.3
Indiana	388.7	766.1	792.6	774.8	781.4
Kansas	16.5	14.8	30.9	30.9	27.9
Kentucky	2,090.4	2,066.8	2,373.8	2,832.2	2,878.8
Louisiana	480.2	497.1	479.2	554.9	523.7
Maine	51.6	51.5	51.5	45.8	40.9
Michigan	4,652.5	5,398.4	5,652.3	5,646.7	5,486.8
Minnesota	4,302.5	4,387.2	4,492.7	4,617.3	4,599.4
Mississippi	1,246.0	1,365.8	1,279.6	1,261.3	1,203.3
Missouri	1,706.9	1,964.4	1,959.7	1,881.4	1,794.3
Montana	9,388.1	9,380.6	9,549.8	9,541.1	8,577.2
Nebraska	129.4	130.8	146.1	142.4	164.3
Nevada	2,059.1	2,592.7	2,285.9	2,402.6	2,364.3
New Hampshire	2,286.2	2,333.4	2,212.8	2,672.5	2,752.5
New Mexico	6,416.1	6,870.0	6,554.0	6,151.1	5,843.1
New York	22.3	23.0	22.6	24.5	23.6
North Carolina	4,085.7	4,088.6	4,868.4	5,243.5	5,252.8
North Dakota	357.5	133.7	133.9	133.4	126.8
Ohio	376.3	398.7	486.6	450.1	393.2
Oklahoma	398.8	404.8	405.6	398.4	389.1
Oregon	20,139.5	18,245.5	18,038.6	18,298.1	18,527.4
Pennsylvania	2,000.8	2,282.4	2,090.3	2,206.5	2,145.6
Puerto Rico	530.2	544.5	523.9	552.3	686.1
South Carolina	1,004.1	1,072.3	1,155.4	1,188.2	1,110.9
South Dakota	2,556.1	2,271.1	2,275.2	2,329.8	2,204.9
Tennessee	2,525.2	2,851.0	2,443.7	2,420.0	2,570.5
Texas	1,965.2	1,868.4	1,867.3	1,919.5	1,737.4
Utah	13,621.1	13,330.4	14,790.7	14,417.5	14,061.0
Vermont	609.2	606.2	743.6	600.3	545.0
Virginia	3,516.4	3,993.6	3,629.6	3,553.3	3,328.0
Washington	13,986.8	14,514.5	14,554.6	13,855.4	12,891.6
West Virginia	1,370.4	1,433.2	1,451.8	1,345.7	1,400.5
Wisconsin	1,928.9	1,838.9	1,587.1	2,184.0	2,073.7
Wyoming	5,719.8	6,529.0	5,996.6	6,189.0	5,540.4
Total	227,553.9	227,707.8	233,437.5	235,709.2	233,549.3

1/ States not listed have no Forest Service recreation program.
2/ One recreation visitor-day (RVD) is the recreation use of National Forest land or water that aggregates 12 visitor-hours. This may entail 1 person for 12 hours, 12 persons for 1 hour, or any equivalent combination of individual or group use, either continuous or intermittent.

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Table 37—State summary of total recreation use on National Forest System lands by activity—fiscal year 1984

State, 1/ Territory, or Commonwealth	Camping	Picnicking	Travel (mechanized)	Water sports	Winter sports	Fishing	Hunting	Hiking & mountain climbing
				1,000 RVD's 2/				
Alabama	192.2	59.1	211.8	145.9	0	61.1	236.7	63.9
Alaska	275.2	49.7	343.5	1,112.9	106.1	390.0	149.6	230.0
Arizona	3,776.2	671.8	6,287.0	1,137.1	121.5	580.8	590.6	625.9
Arkansas	449.4	102.6	376.6	260.5	0	311.6	466.4	102.3
California	14,478.9	1,460.1	14,104.8	4,060.3	3,063.2	2,943.1	1,157.5	2,771.8
Colorado	4,333.5	424.1	4,312.9	214.2	4,459.2	1,317.6	1,045.6	1,513.2
Florida	1,035.6	262.4	261.8	350.4	0	135.6	189.6	39.5
Georgia	490.7	84.7	505.2	163.0	3.3	225.9	312.4	197.9
Idaho	2,753.0	335.5	2,280.6	577.9	612.3	845.2	817.6	437.1
Illinois	102.0	42.2	160.3	60.0	.1	39.3	116.5	83.1
Indiana	127.3	17.7	40.6	45.9	0	53.0	43.7	18.1
Kansas	1.1	2.6	8.2	0	.1	.5	2.4	.5
Kentucky	352.6	110.2	352.6	463.1	.9	229.5	150.0	189.9
Louisiana	102.7	39.6	72.1	34.4	0	46.0	102.7	20.4
Maine	10.9	2.2	1.8	2.5	.8	2.7	7.4	10.5
Michigan	957.6	89.5	1,542.5	345.4	131.0	440.3	640.1	117.7
Minnesota	1,298.7	47.1	544.1	751.8	104.8	667.7	291.9	70.4
Mississippi	174.7	43.8	315.8	83.3	0	71.4	429.0	65.0
Missouri	343.0	93.7	392.7	246.6	.1	85.9	283.8	77.4
Montana	1,720.8	299.7	2,257.2	320.4	586.5	693.6	958.5	619.3
Nebraska	23.8	13.7	18.0	4.3	.2	5.8	17.8	6.6
Nevada	432.6	155.8	309.2	119.5	125.2	106.0	123.1	98.8
New Hampshire	540.2	51.8	372.3	32.0	431.8	21.5	34.1	448.8
New Mexico	1,499.4	532.5	1,044.4	146.6	519.2	358.8	549.2	512.1
New York	7.9	1.9	.8	0	.8	1.3	5.3	1.5
North Carolina	912.4	175.1	940.3	266.1	1.6	284.6	469.4	496.1
North Dakota	13.6	236.4	18.8	2.5	1.3	4.1	60.6	2.4
Ohio	34.7	28.4	87.1	19.9	.3	24.4	98.6	34.5
Oklahoma	55.7	27.2	141.1	27.9	0	20.5	57.9	17.5
Oregon	6,013.1	737.1	4,043.5	1,118.2	953.4	1,152.0	1,290.2	996.6
Pennsylvania	425.1	29.1	353.2	132.1	5.4	263.2	462.9	85.5
Puerto Rico	13.5	200.1	35.8	69.0	0	0	0	97.2
South Carolina	178.9	54.7	268.9	76.5	0	68.3	203.3	41.9
South Dakota	148.3	47.3	1,570.0	56.5	38.5	68.5	158.8	63.6
Tennessee	709.5	243.5	507.7	290.3	.5	172.6	244.8	125.5
Texas	426.3	53.1	150.6	150.5	0	870.0	188.0	30.3
Utah	4,277.2	586.5	2,673.4	352.1	901.2	1,169.7	817.0	773.9
Vermont	43.8	12.9	104.6	12.1	309.5	5.1	30.8	14.9
Virginia	711.8	186.6	604.5	169.9	4.8	277.4	638.2	260.1
Washington	3,728.5	364.3	3,146.1	301.5	1,076.1	620.4	853.3	783.0
West Virginia	405.3	42.9	192.9	35.2	2.2	143.3	280.7	67.0
Wisconsin	440.6	29.0	535.3	157.0	21.0	390.3	215.2	33.3
Wyoming	1,435.7	150.3	1,237.8	157.9	317.5	435.0	453.1	326.2
Total	55,454.0	8,198.5	52,728.4	14,073.2	13,900.4	15,603.6	15,244.3	12,571.2

1/ States not listed have no Forest Service recreation program.

2/ One recreation visitor-day (RVD) is the recreation use of National Forest land or water that aggregates 12 visitor-hours. This may entail 1 person for 12 hours, 12 persons for 1 hour, or any equivalent combination of individual or group use, either continuous or intermittent.

Horseback riding	Recreation cabin use	Nature study	Sightseeing	Visitor information service users	Other developed site use	Total use	State, 1/ Territory, or Commonwealth
				1,000 RVD's 2/			
9.4	0	29.6	17.7	22.9	3.4	1,053.7	Alabama
2.9	101.5	79.7	546.2	97.3	35.0	3,519.6	Alaska
251.7	280.1	545.9	513.6	269.3	725.2	16,376.7	Arizona
30.1	7.6	54.2	25.5	34.4	30.1	2,251.3	Arkansas
585.1	3,205.8	1,120.3	2,015.0	661.0	3,849.4	55,476.3	California
428.6	221.9	490.1	1,212.1	189.1	572.8	20,734.9	Colorado
24.7	132.0	46.3	32.8	33.4	85.9	2,630.0	Florida
29.5	28.5	56.0	117.0	20.0	41.5	2,275.6	Georgia
267.4	255.0	615.0	275.7	134.5	299.1	10,505.9	Idaho
50.3	0	42.1	88.1	11.8	5.6	801.4	Illinois
27.6	0	8.7	1.3	4.8	0	388.7	Indiana
.2	0	.8	0	0	.1	16.5	Kansas
28.3	11.2	51.5	93.9	33.3	23.4	2,090.4	Kentucky
4.9	9.8	17.7	2.9	9.9	17.1	480.2	Louisiana
0	0	2.4	3.3	1.1	6.0	51.6	Maine
22.0	74.9	160.4	84.3	29.8	17.0	4,652.5	Michigan
7.3	204.4	112.5	18.2	37.8	145.8	4,302.5	Minnesota
16.5	0	23.1	7.5	14.8	1.1	1,246.0	Mississippi
27.1	0	78.2	46.2	12.4	19.8	1,706.9	Missouri
391.5	209.2	538.2	330.6	224.3	238.3	9,388.1	Montana
5.8	0	13.8	.3	9.4	9.9	129.4	Nebraska
47.1	25.7	105.9	54.8	205.2	150.2	2,059.1	Nevada
.2	0	12.8	243.9	22.5	74.3	2,286.2	New Hampshire
139.5	90.1	458.7	232.1	163.4	170.1	6,416.1	New Mexico
1.2	0	1.6	0	0	0	22.3	New York
47.4	6.7	92.0	273.0	97.0	24.0	4,085.7	North Carolina
3.7	0	3.1	9.2	1.8	0	357.5	North Dakota
14.1	0	17.5	4.2	10.6	2.0	376.3	Ohio
3.5	0	7.8	30.1	9.4	.2	398.8	Oklahoma
245.3	380.8	1,002.3	988.9	406.1	812.0	20,139.5	Oregon
5.3	48.8	51.5	117.1	12.0	9.6	2,000.8	Pennsylvania
0	3.5	12.3	24.8	45.8	28.2	530.2	Puerto Rico
21.7	0	37.9	23.8	18.2	10.0	1,004.1	South Carolina
16.7	80.8	50.3	122.8	88.4	45.6	2,556.1	South Dakota
26.2	39.1	31.4	51.1	25.2	57.8	2,525.2	Tennessee
7.3	0	16.3	36.7	15.4	20.7	1,965.2	Texas
293.8	198.7	345.8	354.0	126.0	751.8	13,621.1	Utah
1.3	.3	5.1	45.6	3.0	20.2	609.2	Vermont
80.2	0	137.9	370.9	36.2	37.9	3,516.4	Virginia
174.9	407.2	448.2	955.6	447.9	679.8	13,986.8	Washington
4.0	.2	25.0	114.0	21.5	36.2	1,370.4	West Virginia
3.6	15.8	66.9	7.6	5.4	7.9	1,928.9	Wisconsin
197.5	180.1	175.5	265.8	60.0	327.4	5,719.8	Wyoming
3,545.4	6,219.7	7,192.3	9,758.2	3,672.3	9,392.4	227,553.9	Total

Table 38—Status of the National Forest System units of the National Wilderness Preservation System—calendar years 1980-84

State or Commonwealth 1/	1984	1983	1982	1981	1980
			1,000 acres 2/		
Alabama	19	19	13	13	13
Alaska	5,453	5,453	5,453	5,453	5,453
Arizona	1,320	557	557	557	557
Arkansas	116	25	25	25	25
California	3,920	2,139	2,139	2,139	2,139
Colorado	2,584	2,561	2,561	2,561	2,561
Florida	73	23	23	23	23
Georgia	47	32	32	32	32
Idaho	3,825	3,825	3,825	3,825	3,825
Indiana	13	13	0	0	0
Kentucky	5	5	5	5	5
Louisiana	9	9	9	9	9
Minnesota	794	793	793	793	793
Mississippi	5	0	0	0	0
Missouri	63	47	40	40	40
Montana	3,360	3,107	3,107	3,107	3,107
Nevada	65	65	65	65	65
New Hampshire	103	26	26	26	26
New Mexico	1,409	1,402	1,402	1,402	1,402
North Carolina	100	31	31	31	31
Oregon	2,067	1,214	1,214	1,214	1,214
Pennsylvania	10	0	0	0	0
South Carolina	17	17	17	17	17
South Dakota	10	10	10	10	10
Tennessee	33	8	8	8	8
Texas	34	0	0	0	0
Utah	780	30	30	30	30
Vermont	59	17	17	17	17
Virginia	65	9	9	9	9
Washington	2,522	1,501	1,501	1,501	1,501
West Virginia	78	77	30	30	30
Wisconsin	44	20	20	20	20
Wyoming	3,084	2,193	2,193	2,193	2,193
Total	32,086 3/	25,229	25,155	25,155	25,155

1/ States not listed have no National Forest System acres in the National Wilderness Preservation System.
2/ Acreage for most states is estimated pending final map compilation.
3/ Includes all acres added to the Wilderness Preservation System through the end of the 98th Congress.

Table 39—Additions to the National Wilderness Preservation System—fiscal year 1984

Public Law	State	Date	Number of new areas	Number of additions	Number of adjustments	Acres
P.L. 98-406	Arizona	8/28/84	27	5		767,390
P.L. 98-508	Arkansas	10/19/84	8	1		91,103
P.L. 98-425	California	9/28/84	23	15		1,778,782
P.L. 98-430	Florida	9/28/84	6	1		49,150
P.L. 98-514	Georgia	10/19/84		2		14,439
P.L. 98-515	Mississippi	10/19/84	2			5,500
P.L. 98-289	Missouri	5/22/84	1			16,500
P.L. 98-140	Montana	10/31/83	1		1	252,933
P.L. 98-323	New Hampshire	6/19/84	2	1		77,000
P.L. 98-603	New Mexico	10/30/84		1		20
P.L. 98-324	North Carolina	6/19/84	7	4		68,750
P.L. 98-328	Oregon	6/26/84	22	8		852,962
P.L. 98-585	Pennsylvania	10/30/84	2			9,705
P.L. 98-578	Tennessee	10/30/84	3			24,942
P.L. 98-574	Texas	10/30/84	5			34,346
P.L. 98-428	Utah	9/28/84	12			749,550
P.L. 98-322	Vermont	6/19/84	4	1		41,260
P.L. 98-592	Virginia	10/30/84	10	1		55,984
P.L. 98-339	Washington	7/03/84	18	4	1	1,021,133
P.L. 98-321	Wisconsin	6/19/84	2			24,339
P.L. 98-550	Wyoming	10/30/84	8	5		884,129
Total			163	49	2	6,819,917

1/ Includes all acres added to the Wilderness Preservation System by the 98th Congress.

Table 40—Additions to the National Wild and Scenic Rivers System—fiscal year 1984

River	State	Date	Miles
Verde	Arizona	8/28/84	40.5
Tuolumne	California	9/25/84	83
Au Sable	Michigan	10/4/84	23
Illinois	Oregon	10/19/84	50.4
Total			196.9

Table 41—Wildlife and fish habitat improvement by Region—fiscal year 1984

Region	Wildlife	Resident fish	Anadromous fish	Threatened, endangered, & sensitive species	Knutson-Vandenberg	Total 1/
Northern						
Acres	4,207	260	20	670	2,873	**8,030**
Structures	153	214	400	34	620	**1,421**
Rocky Mountain						
Acres	44,962	39	0	1	5,953	**50,955**
Structures	574	149	0	12	494	**1,229**
Southwestern						
Acres	5,049	35	0	666	17,744	**23,494**
Structures	34	39	0	17	145	**235**
Intermountain						
Acres	6,616	92	130	0	5,937	**12,775**
Structures	134	278	540	88	463	**1,503**
Pacific Southwest						
Acres	14,060	14	344	171	16,230	**30,819**
Structures	7	207	86	121	2,770	**3,191**
Pacific Northwest						
Acres	0	0	0	0	26,843	**26,843**
Structures	4	0	1	0	4,527	**4,532**
Southern						
Acres	60,398	1,645	0	20,319	86,203	**168,565**
Structures	290	143	0	0	387	**820**
Eastern						
Acres	19,612	9,631	0	3,626	7,015	**39,884**
Structures	1,377	1,123	0	10	253	**2,763**
Alaska						
Acres	1,010	0	2,245	0	1,250	**4,505**
Structures	0	1	11	0	100	**112**
Total						
Acres	155,914	11,716	2,739	25,453	170,047	**365,869**
Structures	2,573	2,154	1,038	282	9,759	**15,806**

1/ Does not include activities that are accomplished in support of other resource programs.

Table 42—Range allotment management status by Region—fiscal year 1984

Region	Number of allotments			Acres	
	Total	Improved management started	Improved management maintained	Total	Suitable
Northern	1,882	58	1,308	11,884,397	4,133,572
Rocky Mountain	2,524	133	1,702	18,910,803	8,605,998
Southwestern	1,452	59	989	18,989,926	13,089,163
Intermountain	1,891	102	1,425	26,016,559	11,337,738
Pacific Southwest	865	37	569	13,114,627	5,000,545
Pacific Northwest	822	29	427	11,975,715	6,754,348
Southern	648	40	490	3,714,544	2,224,857
Eastern	212	13	108	93,128	45,508
	10,296	471	7,018	104,699,699	51,191,729

Table 43—Range allotment management status—fiscal years 1980-84

	1984	1983	1982	1981	1980
Total allotment	10,296	10,417	11,069	10,871	10,754
Improved management started (number of allotments)	471	534	705	677	1,236
Improved management maintained (number of allotments)	7,018	7,125	6,886	6,705	6,378
Total acres (million acres)	105	104	105	105	112
Suitable acres (million acres)	51	52	52	56	58
Permitted use (million AUM's 1/)	10.1	10.1	9.9	9.8	9.8
Actual use (million AUM's)	8.8	8.8	8.8	8.8	8.8

1/ An animal unit month (AUM) is the amount of grazing required by a 1,000-pound cow for 1 month.

Table 44—Actual grazing use by State—fiscal year 1984

State or Commonwealth 1/	Cattle	Sheep	Domestic horses	Wild horses	Wild burros	Total
				AUM's 2/		
Alabama	2,637	0	42	0	0	2,679
Arizona	1,287,116	13,977	6,273	0	1,051	1,308,417
Arkansas	46,058	0	271	0	0	46,329
California	524,062	55,219	11,741	6,431	648	598,101
Colorado	832,511	146,325	20,221	0	0	999,057
Florida	35,727	0	0	0	0	35,727
Georgia	5,173	0	14	0	0	5,187
Idaho	626,399	216,463	15,510	60	0	858,432
Illinois	15,175	2,691	72	0	0	17,938
Indiana	808	0	0	0	0	808
Kansas	49,874	0	34	0	0	49,908
Kentucky	57	0	0	0	0	57
Louisiana	34,870	0	128	0	0	34,998
Michigan	568	0	0	0	0	568
Minnesota	1,433	0	0	0	0	1,433
Mississippi	13,909	0	0	0	0	13,909
Missouri	30,780	0	16	0	0	30,796
Montana	587,740	20,783	11,026	29	0	619,578
Nebraska	127,587	615	168	0	0	128,370
Nevada	118,808	21,245	1,544	4,498	0	146,095
New Mexico	748,674	22,865	14,360	1,800	180	787,879
New York	9,188	0	42	0	0	9,230
North Carolina	74	0	0	0	0	74
North Dakota	561,974	122	4,588	0	0	566,684
Ohio	1,772	0	0	0	0	1,772
Oklahoma	27,677	0	0	0	0	27,677
Oregon	464,657	38,927	4,482	2,736	0	510,802
South Carolina	341	0	0	0	0	341
South Dakota	478,939	5,572	1,074	0	0	485,585
Texas	75,965	0	68	0	0	76,033
Utah	470,281	190,104	6,817	331	0	667,533
Vermont	291	38	0	0	0	329
Virginia	6,550	130	961	0	0	7,641
Washington	106,282	9,678	8,106	0	0	124,066
West Virginia	9,808	308	24	0	0	10,140
Wisconsin	178	0	2	0	0	180
Wyoming	519,141	126,292	20,353	0	0	665,786
Total	7,823,084	871,354	127,937	15,885	1,879	8,840,139

1/ States not listed had no Forest Service grazing program in 1983.
2/ An animal unit month (AUM) is the amount of grazing required by a 1,000-pound cow for 1 month.

Table 45—Annual grazing statistics—fiscal year 1984

	Permittees 1/	Cattle		Horses and burros		Sheep and goats		Total	
		Number	AUM's 2/	Number	AUM's	Number	AUM's	Number	AUM's
Authorized to graze		1,436,498	8,792,589	134,719	108,830	1,425,154	1,163,062	**2,996,371**	**10,064,481**
Actually grazed:									
Paid permits	14,610	1,340,600	7,797,426	16,440	56,091	1,092,151	864,086	**2,449,191**	**8,717,603**
Free use:									
Recreation stock	76,847	10	158	126,984	59,987	--	--	**126,994**	**60,145**
Other free use	218	2,288	15,353	1,323	10,336	870	2,815	**4,481**	**28,504**
Non-NFS lands	(446)	(83,403)	(484,450)	(629)	(6,942)	(23,002)	(20,074)	**(107,034)**	**(511,466)**
Crossing	70	24,912	3,325	43	69	34,766	4,104	**59,721**	**7,498**
Unauthorized use	142	6,556	6,822	200	1,454	1,034	349	**7,790**	**8,625**
Total 3/	91,887	1,374,366	7,823,084	144,990	127,937	1,128,821	871,354	**2,648,177**	**8,822,375**
Wild horses				1,326	15,885			**1,326**	**15,885**
Wild burros				261	1,879			**261**	**1,879**
Total actually grazed	91,887	1,374,366	7,823,084	146,577	145,701	1,128,821	871,354	**2,649,764**	**8,840,139**
Losses:									
Poisonous plants		1,140		3		1,865		**3,008**	
Predators		430				10,428		**10,858**	
Other 4/		5,388		24		5,701		**11,113**	

1/ Permittees holding paid permits are not counted in other categories.
2/ An animal unit month (AUM) is the amount of grazing required by a 1,000-pound cow for 1 month.
3/ Non-NFS land data not included in totals.
4/ Includes losses due to thievery, natural death, and accidental death.

Table 46—Range improvements by type—fiscal year 1984

Improvement type	Unit of measure	Units of construction completed	Total cost
Structural:			
Water developments	Sites	1,626.0	1,716,138
Range fence	Miles	1,272.7	3,363,367
Pipeline	Miles	250.5	1,690,066
Other structural facilities	Sites	226.0	460,993
Subtotal		N/A 1/	7,230,564
Nonstructural:			
Cover manipulation, brush	Acres	31,995	917,210
Range plant control	Acres	4,129	161,238
Forage improvement	Acres	102,976	957,055
Noxious farm weed control	Acres	15,541	652,599
Subtotal		154,641	2,688,102
Total		N/A	9,918,666

1/ N/A = not applicable.

Table 47—Road and bridge construction and reconstruction by State—fiscal year 1984

State, Territory, or Commonwealth 2/	From appropriated funds 1/			By timber purchasers		
	Roads	Bridges	Cost	Roads 3/	Bridges	Cost
	Miles	Number	1,000 dollars	Miles	Number	1,000 dollars
Alabama	2.6	0	1,007.0	45.1	0	1,064.0
Alaska	100.9	37	23,229.4 4/	31.4	2	2,132.0
Arizona	25.2	3	4,632.1	313.6	0	1,782.8
Arkansas	13.3	0	3,208.1	162.9	0	3,987.0
California	46.9	1	33,967.3	794.2	6	22,428.4
Colorado	114.0	2	11,072.8	184.0	0	1,107.0
Florida	0	0	891.4	73.3	0	1,170.0
Georgia	7.6	1	2,941.1	43.0	0	615.0
Idaho	160.1	9	20,844.1	477.9	0	10,882.8
Illinois	.1	0	503.2	17.9	0	236.0
Indiana	0	0	291.7	12.8	0	153.7
Kentucky	21.3	1	1,600.9	46.1	0	387.0
Louisiana	4.4	0	1,916.2	101.0	0	3,077.0
Maine	0	0	64.4	0	0	0
Michigan	58.0	1	3,299.6	102.6	0	638.6
Minnesota	53.7	1	5,011.8	65.6	0	674.6
Mississippi	0	0	1,099.5	149.3	0	1,363.0
Missouri	60.1	0	1,525.6	41.3	0	278.8
Montana	248.3	1	22,775.3	355.7	0	4,592.0
Nebraska	.3	0	20.0	0	0	0
Nevada	0	0	324.3	0	0	0
New Hampshire	0	0	411.4	13.3	0	346.7
New Mexico	75.2	0	9,110.1	166.4	0	1,858.9
North Carolina	60.7	3	5,566.9	93.2	0	1,779.0
Ohio	0	0	123.3	5.8	0	86.3
Oklahoma	7.5	0	255.4	0	0	0
Oregon	108.8	8	38,913.6	1,246.2	1	30,935.0
Pennsylvania	23.4	1	1,565.3	15.1	0	348.9
Puerto Rico	0	0	94.6	0	0	0
South Carolina	16.6	3	1,318.1	82.6	0	1,396.0
South Dakota	83.0	3	3,689.5	115.0	0	462.0
Tennessee	66.9	5	1,873.1	36.9	0	559.0
Texas	4.0	0	1,104.8	42.3	0	1,131.0
Utah	9.2	0	5,865.8	44.0	0	99.0
Vermont	9.8	0	1,114.2	.3	0	4.2
Virginia	88.3	0	4,640.8	97.7	0	747.0
Washington	52.0	7	19,314.9	352.4	4	13,616.0
West Virginia	35.2	0	2,759.0	12.6	0	308.1
Wisconsin	74.6	8	6,382.9	30.1	0	215.2
Wyoming	35.6	2	6,007.5	135.3	0	595.0
Total	1,667.6	97	250,337.0	5,506.9	13	111,057.0

1/ Includes $6,348,000 carried over from 1983, and $1,914,000 of 1984 Pay Act funds. Prior year Reports of the Forest Service do not include comparable amounts.
2/ States not listed had no Forest Service road programs in 1984.
3/ Does not include 475 miles turned back to Forest Service for construction.
4/ Includes $20,287 of Tongass Timber Supply Fund.

Table 48—Timber purchaser roads constructed by the Forest Service by State—fiscal year 1984

State or 1/ Commonwealth	Roads constructed	Cost
	Miles	1,000 dollars
Alabama	3.2	52.0
Arkansas	12.6	445.0
California	7.7	494.6
Colorado	17.0	213.0
Florida	21.0	435.0
Georgia	0	159.0
Idaho	29.6	810.5
Illinois	4.1	28.1
Kentucky	8.5	81.0
Louisiana	6.9	167.0
Michigan	2.5	17.7
Minnesota	1.4	31.8
Mississippi	9.9	305.0
Montana	112.9	1,766.0
New Hampshire	1.4	24.0
New Mexico	9.9	101.2
North Carolina	2.6	135.0
Oklahoma	.6	25.0
Oregon	114.9	2,479.0
Pennsylvania	29.0	406.0
South Dakota	22.0	231.0
Texas	13.6	371.0
Vermont	.5	32.7
Washington	14.1	1,370.0
West Virginia	8.7	280.7
Wisconsin	3.1	69.0
Wyoming	17.0	143.0
Total	474.7	10,673.3

1/ States not listed had no timber purchaser roads constructed by the Forest Service in 1984.

Table 49—State and Private Forestry funding—fiscal year 1984 compared to 1981-84 average

	1984 Actual	1984 RPA	1981-84 average 1/	Percent of actual to average
	1,000 constant 1984 dollars 2/			
Appropriated accounts				
Forest pest management	**29,179**	38,380	27,087	108
Fire protection	**14,016**	39,840	16,761	84
Forest management and utilization	**10,713**	46,050	19,969	54
Special projects	**6,845**	7,980	5,946	115
Subtotal	**60,753**	132,250	69,763	87
Transfer accounts				
Rural community fire protection	**3,250**	-- 3/	3,473	94
Watershed and flood prevention	**3,670**	--	4,583	80
Watershed planning	**250**	--	310	81
Resource conservation and development	**768**	--	860	89
River basin surveys and investigations	**1,229**	--	1,593	77
Forestry incentives program	**1,250** 4/	--	1,336	94
Agricultural conservation program	**1,900** 4/	--	2,030	94
Subtotal	**12,317**	0	14,185	87
Total	**73,070**	132,250	83,948	87

1/ In order that a comparison may be made with 1984 actual, general administration has been eliminated from individual line items in calculating the average. Total appropriated general administration funds are included in the "General Administration" line item on tables 11 and 12.
2/ GNP implicit price deflator used for 1981-83.
3/ -- = not reported in the RPA.
4/ Includes only technical assistance allocated for the Forestry Incentives and Agriculture Conservation Programs (administered jointly by ASCS and FS.)

Table 50—State and Private Forestry funding—fiscal years 1981-84

	1984	1983	1982	1981 1/
		1,000 dollars		
Appropriated accounts				
Forest pest management	**29,179**	27,844	23,760	21,289
Fire protection	**14,016**	14,411	14,193	19,666
Forest management and utilization	**10,713**	17,800	22,522	23,450
Special projects	**6,845**	3,500	5,080	6,762
Subtotal	**60,753**	62,835	65,555	71,167
Transfer accounts				
Rural community fire protection	**3,250**	3,250	3,250	3,250
Watershed and flood prevention	**3,670**	3,670	5,105	4,618
Watershed planning	**250**	250	307	344
Resource conservation and development	**768**	768	722	946
River basin surveys and investigations	**1,229**	1,229	1,484	1,957
Forestry incentives program	**1,250** 2/	1,250	1,250	1,250
Agricultural conservation program	**1,900** 2/	1,900	1,900	1,900
Subtotal	**12,317**	12,317	14,018	14,265
Total	**73,070**	75,152	79,573	85,432

1/ In order that a comparison may be made with 1982-84 general administration has been eliminated from individual line items in calculating the average. Total appropriated general administration funds are included in the "General Administration" line item on tables 11 and 12.

2/ Includes only technical assistance allocated for the Forestry Incentives and Agriculture Conservation Programs (administered jointly by ASCS and FS.)

Table 51—Summary of State and Private Forestry accomplishments compared to funded output levels—fiscal year 1984

	Unit of measure 1/	1984 Funded	1984 Accomplished	1984 Percent of funded	1981-84 average accomplishment	1984 as percent of 4-year average
Appropriated accounts						
Forest pest management 2/						
Insect and disease management surveys	MM acres	424	568	134	644.3	88
Insect and disease suppression	MM acres	-- 4/	1.03	--	2.3	--
Insect and disease special projects	Projects	25	41	164	34.3	--
Forest management and utilization 2/						
Forest resource management						
Forest land management plans	MM acres	2.6	3.8	146	3.7	104
Timber prepared for harvest	MM cubic ft.	93.6	294.3	314	246.4	119
Reforestation 5/	M acres	385.9	562.4	146	529.6	106
Timber stand improvement 5/	M acres	197.7	319.7	162	310.5	103
Woodland owners assisted	M owners	93.4	151.5	162	148.3	102
Wood utilization	MM cubic ft.	24.1	80 6/	332	127.9	63
Seedling, nursery, and tree improvement	MM seedlings	--	731.9	--	756.3	97
Urban forestry assistance	Areas assisted	2,980	3,958	133	3,650.8	108
Management improvement						
State forest resource planning	MM acres	157	180	115	219.8	82
Transfer accounts						
Rural community fire protection, FmHA	M approved applications	3.0	2.9	97	3.0	98
Watershed and flood prevention, SCS	Projects	87	87	100	95.8	91
Watershed planning, SCS	Plans	71	71	100	54.5	130
Resource conservation and development, SCS	Projects	50	50	100	58.3	86
River basin surveys and investigations, SCS	Plans	35	35	100	43.3	81
Forestry incentives program, ASCS						
Reforestation	M acres	-- 7/	147.6	--	164.7	90 8/
Timber stand improvement	M acres	-- 7/	36.3	--	67.9	53 8/
Agricultural conservation program, ASCS						
Reforestation	M acres	-- 7/	48.4	--	56.1	86 8/
Timber stand improvement	M acres	-- 7/	20.3	--	46.9	43 8/

1/ M = thousand, MM = million.
2/ Includes accomplishments on National Forest System and other Federal lands, as well as State and private lands.
3/ Reflects accomplishments using appropriated funds as well as reprogrammed, carryover, and/or allocated funds.
4/ -- = not applicable.
5/ Includes Forestry Incentives Program and Agricultural Conservation Program accomplishments.
6/ Not all States reported.
7/ Level reflects decrease in funding for forestry aspects of SCS projects.
8/ Funded targets for Forestry Incentives and Agricultural Conservation Program were included with those of Rural Forestry Assistance above.

Table 52—Summary of State and Private Forestry accomplishments compared to RPA—fiscal year 1984

	Unit of measure 1/	1984 RPA goal	1984 Accomplished	1984 Percent of RPA accomplished	1981-84 average RPA goal	1981-84 average Accomplished	1981-84 average Percent of RPA accomplished
Appropriated accounts							
Forest pest management 2/							
Insect and disease management surveys	MM acres	589	568	96	523.5	644.3	123
Insect and disease suppression	MM acres	-- 4/	1.03	--	--	2.3	--
Insect and disease special projects	Projects	--	41	--	--	34.2	--
Forest Management and Utilization 2/							
Forest resource management							
Rural forestry assistance							
Forest land management plans	MM acres	4.7	3.8	81	3.9	3.7	94
Timber prepared for harvest	MM cubic ft.	348	294.3	85	292.8	246.4	84
Reforestation 5/	M acres	1,120	562.4	50	902.5	529.6	59
Timber stand improvement 5/	M acres	699	319.7	46	587.0	310.5	53
Woodland owners assisted	M owners	273	151.5	55	231.3	148.3	64
Wood utilization	MM cubic ft.	209	80 6/	38	171.5	127.9	75
Seedling, nursery and tree improvement	MM seedlings	--	731.9	--	--	756.3	--
Urban forestry assistance	Areas assisted	--	3,958	--	--	3,650.8	--
Management improvement							
State forest resource planning	MM acres	157	180	115	145.8	219.8	151
Transfer accounts							
Rural community fire protection, FmHA	M approved applications	4.2	2.9	69	3.1	2.9	95
Watershed and flood prevention, SCS	Projects	184	87	47	170.3	95.8	56
Watershed planning, SCS	Plans	136	71	52	112.3	54.5	49
Resource conservation and development, SCS	Projects	70	50	71	69.5	58.3	84
River basin surveys and investigations, SCS	Plans	46	35	76	47.3	43.3	92
Forestry Incentives Program, ASCS							
Reforestation	M acres	-- 7/	147.6	-- 7/	-- 7/	164.7	-- 7/
Timber stand improvement	M acres	-- 7/	36.3	-- 7/	-- 7/	67.9	-- 7/
Agricultural conservation program, ASCS							
Reforestation	M acres	-- 7/	48.4	-- 7/	-- 7/	56.1	-- 7/
Timber stand improvement	M acres	-- 7/	20.3	-- 7/	-- 7/	46.9	-- 7/

1/ M = thousand, MM = million.
2/ Includes accomplishments on National Forest System and other Federal lands, as well as State and private lands.
3/ Reflects accomplishments using appropriated funds as well as reprogrammed, carryover, and/or allocated funds.
4/ -- = not applicable; goals for these items were not included in the RPA.
5/ Includes Forestry Incentives Program and Agricultural Conservation Program accomplishments.
6/ Not all States reported.
7/ RPA and funded targets for Forestry Incentives and Agricultural Conservation Program were included with those of Rural Forestry Assistance above.

Table 53—Pesticide Use Report—fiscal year 1984

Common name	Target pest/ purpose	Quantity used/treated	
		Pounds 1/	Units 2/
Herbicides:			
Atrazine	Conifer Release	4,607.00	1,105.00 (A)
	Site Preparation	310.00	50.00 (A)
Dalapon	Conifer Release	151.00	25.00 (A)
	Site Preparation	179.00	24.00 (A)
Hexazinone	Conifer Release	186.00	197.00 (A)
Pronamide	Conifer Release	672.00	338.00 (A)
Simazine	Site Preparation	118.00	22.00 (A)
	Conifer Release	1,117.00	249.00 (A)
Tebuthiuron	Range Improvement	43.20	80.00 (A)
Amitrole	General Weed Control	2.00	15.00
	Noxious Weeds	122.00	52.00
	Rights-of-way	90.00	25.00
	Site Preparation	170.00	29.00
Ammonium Sulfamate	General Weed Control	614.00	33.00
	Site Preparation	48.00	1.00
	Wildlife Habitat Improvement	654.00	48.00
Atrazine	Conifer Release	803.00	357.00
	Firebreak Management	160.00	40.00
	General Weed Control	79.20	25.14
	Nursery Weeds	96.00	48.00
	Range Improvement	20.00	10.00
	Rights-of-way	1,680.00	175.00
	Site Preparation	415.00	109.80
	Wildlife Habitat Improvement	65.00	40.00
Atrazine/	Site Preparation	30.00	56.00
Glyphosate/		30.00	
Simazine		30.00	
Bifenox	Nursery Weeds	80.00	27.00
Bromacil	General Weed Control	46.00	2.00
	Rights-of-way	8.00	3.00
Bromacil/	General Weed Control	80.00	18.00
Diuron		21.00	
Butylate	Firebreak Management	7.50	2.50
Dacthal	Nursery Weeds	1,078.00	126.00
Dalapon	Conifer Release	341.00	151.00
	Rights-of-way	25.00	32.00
Dicamba	Conifer Release	999.00	1,341.00
	General Weed Control	3.00	3.00
	Noxious Weeds	32.00	103.00
	Poison Plant Control	15.00	15.00
	Range Improvement	269.00	331.00
	Rights-of-way	12.00	12.00
	Rights-of-way	148.00	25.40 Miles
	Site Preparation	2,487.50	1,275.00
	Wildlife Habitat Improvement	10.50	29.00
Dichlobenil	Conifer Release	2.00	4.00
	General Weed Control	6.00	5.00
Diphenamid	Hardwood Release	40.00	7.00
	Nursery Weeds	267.75	28.00
Diquat	Aquatic Weed Control	49.00	22.00

See footnotes at end of table.

Table 53—Pesticide Use Report—fiscal year 1984—Continued

Common name	Target pest/ purpose	Quantity used/treated	
		Pounds 1/	Units 2/
Herbicides: (Cont.)			
Diuron	General Weed Control	5.60	4.00
	Rights-of-way	543.00	202.00
Endothall	Aquatic Weed Control	13.00	6.00
EPTC	Firebreak Management	90.00	15.00
	Wildlife Habitat Improvement	6.00	2.00
Fosamine Ammonium	General Weed Control	24.00	4.00
	Rights-of-way	3,984.00	594.00
	Site Preparation	616.00	193.00
	Wildlife Habitat Improvement	129.00	39.50
Glyphosate	Aquatic Weeds and Algae	294.00	126.00
	Conifer Release	8,675.95	5,529.25
	Firebreak Management	16.00	33.00
	General Weed Control	637.01	247.95
	Hardwood Release	6.00	1.00
	Noxious Weeds	566.00	410.50
	Nursery Weeds	28.00	19.00
	Poisonous Plant Control	177.00	183.00
	Range Improvement	336.00	273.00
	Research	13.00	14.00
	Rights-of-way	188.10	222.50
	Site Preparation	3,011.00	1,972.00
	Thinning	56.00	44.00
	Wildlife Habitat Improvement	667.00	298.80
Hexazinone	Conifer Release	95,575.90	29,835.00
	General Weed Control	240.00	8.00
	Noxious Weeds	1.00	10.00
	Nursery Weeds	9.00	2.00
	Rights-of-way	150.00	126.00
	Saratoga Spittlebug Control	414.00	236.00
	Site Preparation	42,063.00	18,052.00
	Wildlife Habitat Improvement	313.00	274.00
Linuron	General Weed Control	3.00	3.00
Maleic Hydrazide	Rights-of-way	99.00	36.00
Mefluidide	General Weed Control	0.25	0.25
	Rights-of-way	24.00	32.00
MSMA	Rights-of-way	214.00	82.00
	Thinning	78.00	99.00
Napropamide	Nursery Weeds	46.25	36.00
Nitrofen	Nursery Weeds	160.00	40.00
Oryzalin	General Weed Control	4.00	1.00
	Rights-of-way	133.00	42.00
Oust	Conifer Release	26.00	351.00
	Rights-of-way	1.00	32.00
	Site Preparation	34.69	75.33
Oxyfluorfen	Nursery Weeds	224.00	248.00
Paraquat	Nursery Weeds	0.25	0.50

See footnotes at end of table.

Table 53—Pesticide Use Report—fiscal year 1984—Continued

Common name	Target pest/ purpose	Quantity used/treated Pounds 1/	Units 2/
Herbicides: (Cont.)			
Picloram	Conifer Release	181.00	139.00
	Firebreak Management	8,425.00	347.00
	Noxious Weeds	3,080.50	2,241.00
	Poisonous Plant Control	170.00	160.00
	Range Improvement	10,310.00	7,257.00
	Rights-of-way	403.00	508.00
	Site Preparation	2,917.00	777.00
	Wildlife Habitat Improvement	12,218.00	1,826.00
Prometon	General Weed Control	400.00	10.00
	Rights-of-way	790.00	20.05
Sethyoxdin	General Weed Control	0.27	1.00
	Nursery Weeds	18.00	40.00
Simazine	Conifer Release	467.00	165.00
	General Weed Control	13.20	5.75
	Nursery Weeds	21.50	11.75
	Research	25.00	6.00
	Rights-of-way	1,160.00	265.00
	Site Preparation	254.00	91.00
Sodium Metaborate	Rights-of-way	1,700.00	2.00
Tebuthiuron	General Weed Control	38.00	3.00
	Research	1.00	1.00
	Rights-of-way	418.00	117.00
	Wildlife Habitat Improvement	230.00	222.00
Triclopyr	Conifer Release	840.27	755.50
	Rights-of-way	821.00	380.00
	Site Preparation	5,559.00	1,469.00
Trifluralin	Firebreak Management	16.00	32.00
	General Weed Control	4.00	2.00
	Hardwood Release	30.00	7.00
2,4-D	Aquatic Weed Control	90.00	3.00
	Conifer Release	21,594.00	6,708.00
	General Weed Control	810.00	462.00
	Noxious Weeds	10,061.00	6,036.00
	Nursery Weeds	2,593.00	940.00
	Poisonous Plant Control	100.00	37.00
	Range Improvement	731.00	1,008.00
	Rights-of-way	1,498.00	622.00
	Site Preparation	11,763.00	5,228.00
	Wildlife Habitat Improvement	3,733.00	3,661.00
2,4-DP	Conifer Release	2,471.00	1,157.00
	Rights-of-way	768.00	425.00
	Site Preparation	1,019.00	100.00
2,4-D/ Amitrole	Noxious Weeds	7.00 6.00	7.00
2,4-D/ Amitrole/ Dicamba	Noxious Weeds	2,015.00 107.00 504.00	1,016.00
2,4-D/ Amitrole/ Picloram	Noxious Weeds	15.00 20.00 5.00	28.00

See footnotes at end of table.

Table 53—Pesticide Use Report—fiscal year 1984—Continued

Common name	Target pest/ purpose	Quantity used/treated	
		Pounds 1/	Units 2/
Herbicides: (Cont.)			
2,4-D/ Atrazine/ Diuron/ Oust	Rights-of-way	184.00 490.00 460.00 6.00	92.00
2,4-D/ Dicamba	Noxious Weeds	1,178.00 625.00	831.00
	Poison Plant Control	20.00 10.00	10.00
	Rights-of-way	157.00 83.00	204.00 Miles
	Rights-of-way	163.00 81.00	28.00 Acres
	Site Preparation	393.00 206.00	100.00
	Wildlife Habitat Improvement	46.00 23.00	188.00
2,4-D/ Dicamba/ Picloram/	Noxious Weeds	12.00 3.00 6.00	15.00
2,4-D/ Picloram	Conifer Release	13,030.00 3,616.00	10,235.00
	General Weed Control	414.00 104.00	78.00
	Noxious Weeds	1,360.00 465.00	1,235.00
	Rights-of-way	1,683.00 498.00	693.30
	Site Preparation	16,897.00 4,454.00	13,246.00
	Thinning	1.60 .60	1.00
	Wildlife Habitat Improvement	1,586.00 401.00	1,213.00
2,4-D/ Picloram/ Triclopyr	Rights-of-way	458.00 114.00 683.00	293.00
	Site Preparation	172.00 43.00 258.00	117.00
2,4-D/ 2,4-DP	Conifer Release	2,299.00 2,299.00	2,299.00
	General Weed Control	312.00 312.00	210.00
Total 1984 Herbicide Use (Including Aerial Use)		344,196.49	141,900.37
Total Aerial Use		7,383.20	2,090.00

1/ See footnotes at end of table.

Table 53—Pesticide Use Report—fiscal year 1984—Continued

Common name	Target pest/ purpose	Quantity used/treated		
		Pounds 1/	Units 2/	
Insecticides:				
Azinphos-Methyl	Seed & Cone Insects	8,773.00	151,983.00	(A) Trees
Bacillus thuringiensis	Western Spruce Budworm	78,304.00	BIUs 53,649.00	(A)
Carbaryl	Western Spruce Budworm	123,000.00	123,000.00	(A)
Fenvalerate	Seed & Cone Insects	348.00	33,728.00	(A) Trees
Pheromones	Pine Shoot Borer	1.88	200.00	(A)
Acephate	Needle miners	1.00	1.00	
	Seed & Cone Insects	3.50	15.00	
	Seed & Cone Insects	1.23	53.00	Trees
	Tussock Moth	3.00	99.00	Trees
Amdro	Ants	6.00	12.00	
Azinphos-Methyl	Scales	1.00	1.00	
Bendiocarb	Fleas	51.00	245.00	
Carbaryl	Fleas	1.00	5.00	
	Grasshoppers	2.00	1.00	
	Mountain Pine Beetle	2,872.00	158.00	
	Mountain Pine Beetle	1,270.50	6,719.00	Trees
	Nursery Insects	16.40	15.00	
	Sucking Insects	21.00	12.00	
Carbofuran	Seed & Cone Insects	599.50	3,054.00	Trees
Chlordane	Termites	16.00	7.00	Buildings
Chlorpyrifos	Pales Weevil	41.00	269.00	
	Webworms	24.00	13.00	
Coumaphos	Cattle Flies	225.00	900.00	Cattle
	Cattle Ticks & Lice	11.00	28.00	Treatment stations
Diazinon	Aphids	18.00	11.00	
	Cutworms	48.00	78.00	
	Fire Ants	2.00	50.00	Hills
Dimethoate	Miscellaneous Insects	0.50	1.00	
	Pine Tip Moth	15.00	30.00	
Disulfoton	Miscellaneous Insects	2.00	21.00	
	Nursery Insects	21.00	5.00	
Ethylene Dibromide	Mountain Pine Beetle	625.00	3,000.00	
Fenvalerate	Seed & Cone Insects	38.00	1,500.00	Trees
Lindane	Balsam Woolly Aphid	24.00	9,000.00	Trees
	Greenhouse Insects	1.00	10,000.00	Seedlings
	Mountain Pine Beetle	135.00	1,946.00	Trees
	Mountain Pine Beetle	674.00	9,900.00	Acres
	Seed & Cone Insects	193.00	1,478.00	Trees
	Southern Pine Beetle	65.00	25,070.00	Trees
Malathion	Aphids	0.76	1.00	
	Miscellaneous Insects	5.00	50.00	Buildings
	Mites	0.30	0.75	
	Nursery Insects	1.00	1.00	
	Sawflies	3.00	3.00	
	Seed & Cone Insects	126.00	2,600.00	Trees
Methoxychlor	Ticks & Flies	3.00	8.00	Treatment stations
	Nursery Insects	16.00	16.00	

See footnotes at end of table.

Table 53—Pesticide Use Report—fiscal year 1984—Continued

Common name	Target pest/ purpose	Quantity used/treated Pounds 1/	Units 2/	
Insecticides: (Cont.)				
Methyl Bromide	Structural Pests	150.00	1.00	Building
Parathion	Scales	1.50	1.00	Acre
Permethrin	Cone Beetles	2.40	16.50	
Petroleum Oil	Mites	1.00	0.50	Acre
Pheromones	General Insect Control	0.88	100.00	
	Woodborers	1.00	100.00	Acres
Phosmet	Pales Weevil	50.00	322.00	Acres
Pyrethrin	Nursery Insects	1.00	10.00	
Temephos	Mosquitoes	3.00	52.00	
Tetrachlorvinphos	General Insect Control	70.00	25.00	
Toxaphene	Cattle Ticks & Lice	8.00	400.00	Cattle
Total 1984 Insecticide Use (Including Aerial Use)		217,924.85	191,290.75	3/
Total Aerial Use		210,426.88	176,849.00	
Algicides:				
Copper Sulfate	Aquatic Weed & Algae Control	57.00	10.00	
Total 1984 Algicide Use		57.00	10.00	
Fungicides and Fumigants:				
Benomyl	Botrytis	14.00	0.15	
	Fusarium	21.00	26.00	
	Nursery Fungi	104.50	229.50	
	Other Diseases	0.30	0.75	
	Phomopsis Canker	135.00	143.00	
Borax	Annosus Root Rot	7,600.50	2,997.00	
	Annosus Root Rot	20.00	150.00	Stumps
	Annosus Root Rot	16.00	225.00	Trees
Bordeaux Mixture	Nursery Fungi	8.16	1.00	
Captan	Fusarium	4.00	24.00	
	Nursery Fungi	149.00	85.00	
	Nursery Fungi	3.00	5,150.00	Lbs. seed
	Nursery Fungi	17.50	2.00	Greenhouses
	Nursery Fungi	2.22	2,624.00	Square feet
	Other Diseases	2.00	1.00	

See footnotes at end of table.

Table 53—Pesticide Use Report—fiscal year 1984—Continued

Common name	Target pest/ purpose	Quantity used/treated Pounds 1/	Units 2/	
Fungicides and Fumigants: (Cont.)				
Chlorothalonil	Botrytis	3.00	0.15	
	Nursery Fungi	966.11	507.00	
	Nursery Fungi	0.06	500.00	Square feet
	Phomopsis Canker	129.00	78.00	
	Seedling Blights	15.00	10.00	
	Sirococcus Tip Blight	0.25	1.00	
Copper Compounds	Seedling Blights	6.00	10.00	
DCNA	Botrytis	12.75	2.00	Greenhouses
	Nursery Fungi	48.00	48.00	
Dichloropropene	Nematodes	4,126.00	78.10	
Dodine	Other Diseases	1.00	1.00	
	Shot Hole Disease	16.00	12.00	
Lime Sulphur	Powdery Mildew	0.43	1.00	
Maneb	Lophodermium Needle Blight	39.00	10.00	
Metam-Sodium	Nematodes	52.00	0.25	
Metalaxyl	Nursery Fungi	68.18	70.00	
Methyl Bromide/ Chloropicrin	Nursery Fungi	163.50 7.00	1,725.00	Square feet
	Nursery Fungi	66,404.40 7,647.10	229.25	
Thiophanate-Methyl	Nursery Root Rot	46.09	2.00	
Thiram	Damping Off	19.00	140.00	Lbs. seed
	Damping Off	10.00	6.00	Acres
	Nursery Fungi	3.00	2,500.00	Seedlings
Triadimefon	Fusarium	87.00	52.00	
Total 1984 Fungicide and Fumigant Use		87,985.05	4,623.15	4/
Predacides and Piscicides:				
Antimycin	Fish	0.10	1.71	Stream miles
	Fish	1.00	2.00	
	Fish	6.00	13.00	Acre feet
Rotenone	Fish	124.00	75.00	
	Fish	56.25	15.00	Acre feet
Sodium Cyanide	Coyotes	0.13	9.00	Bait stations
	Coyotes	2.64	30,000.00	
Total 1984 Predacide and Piscicide Use		190.13	30,077.00	

See footnotes at end of table.

Table 53—Pesticide Use Report—fiscal year 1984—Continued

Common name	Target pest/ purpose	Quantity used/treated Pounds 1/	Units 2/	
Repellents:				
Putrescent Egg Solids	Deer	4,799.35	16,557.00	
Thiram	Birds	60.00	1,720.00	
	Commensal Rodents	2,101.00	13,245.00	Lbs. seed
	Deer	1.00	600.00	Trees
	Rabbits	5,886.00	2,943.00	
Total 1984 Repellent Use		12,847.35	21,220.00	
Rodenticides:				
Aluminum Phosphide	Ground Squirrels	56.00	150.00	Burrows
	Prairie Dogs	100.30	6,881.00	
Carbon Dioxide	Pocket Gopher	3.00	4.00	
Diphacinone	Ground Squirrels	42.00	190.00	
Endrin	Commensal Rodents	3.00	310.00	Lbs. seed
Strychnine	Pocket Gophers	2,218.00	60,183.00	
Zinc Phosphide	Commensal Rodents	0.22	4.50	
	Commensal Rodents	4.00	1,600.00	Square feet
	Prairie Dogs	2,299.80	22,494.00	
Total 1984 Rodenticide Use		4,726.32	89,756.50	
Grand Total Pesticide Use		667,870.19	478,867.77	

1/ Quantities expressed in pounds unless otherwise indicated.
2/ Units treated are expressed in acres unless otherwise indicated. Aerial applications are indicated by (A). All others are ground applications.
3/ Plus 1,300 cattle, 237,230 trees, 58 buildings, and 10,000 seedlings.
4/ Plus 225 trees, 2,500 seedlings, 5,290 pounds of seed, 150 stumps, and 4 greenhouses.

Table 54—Wildfires on State and private lands protected under the Cooperative Forestry Assistance Act (P.L. 95-313)—calendar year 1983

State, Territory, or Commonwealth	Area protected	Human-caused fires	Human-caused area burned
	1,000 acres		Acres
Alabama	25,029	4,673	62,162
Alaska	66,301	222	9,095
Arizona	18,328	285	16,766
Arkansas	20,698	2,134	31,374
California	32,833	6,795	76,210
Colorado	25,958	752	11,697
Connecticut	2,390	1,094	829
Delaware	557	6	29
Florida	27,102	3,810	37,489
Georgia	27,279	6,739	23,938
Guam	82	960	10,247
Hawaii	3,306	223	21,982
Idaho	7,127	140	903
Illinois	8,453	82	948
Indiana	7,328	417	3,581
Iowa	7,612	1,197	1,274
Kansas	19,793	4,659	35,878
Kentucky	16,865	2,021	31,657
Louisiana	20,939	3,936	31,151
Maine	17,743	587	828
Maryland	3,700	526	7,696
Massachusetts	3,581	4,787	3,441
Michigan	19,675	509	4,197
Minnesota	22,830	1,305	27,289
Mississippi	19,858	4,029	43,307
Missouri	16,587	2,926	26,934
Montana	34,839	160	3,326
Nebraska	27,154	1,094	10,103
Nevada	8,777	154	15,352
New Hampshire	4,631	816	333
New Jersey	2,705	1,087	7,125
New Mexico	40,199	162	10,321
New York	16,958	317	1,486
North Carolina	20,817	2,686	11,747
North Dakota	31,495	223	8,887
Ohio	5,823	838	2,542
Oklahoma	5,087	1,546	29,018
Oregon	13,099	466	1,592
Pennsylvania	19,541	935	4,016
Puerto Rico	829	No Data Available	
Rhode Island	512	107	178
South Carolina	13,038	4,150	13,611
South Dakota	25,816	761	6,665
Tennessee	12,766	2,886	25,391
Texas	22,123	1,166	11,595
Utah	14,724	213	24,141
Vermont	4,638	155	187
Virginia	18,519	2,608	3,556
Washington	13,177	430	1,620
West Virginia	12,833	1,417	19,580
Wisconsin	18,898	1,302	2,555
Wyoming	21,341	529	16,729
Total	852,293	81,022	752,558

Table 55—Summary of selected cooperative forest management and processing program activities—selected fiscal years

	Woodland owners assisted	Timber sale assistance--volume marked	Loggers and processors assisted
		MBF 1/	
1945	8,093	411,330	0
1950	22,828	518,566	0
1955	34,828	549,373	8,182
1960	82,188	569,178	8,099
1965	99,074	716,950	9,248
1970	115,197	1,225,520	13,620
1971	127,828	860,950	14,627
1972	274,001	955,627	5,290
1973	106,422	1,578,664	4,855
1974	117,990	907,311	5,353
1975	140,940	677,532	5,405
1976	105,184	596,599	15,318
1976-77 (T.Q.) 2/	25,253	220,649	5,849
1977	133,619	921,171	29,101
1978	165,329	1,120,743	12,749
1979	183,585	755,103	11,393
1980	176,385	870,964	11,582
1981	164,279	683,181	18,609
1982	141,472	841,475	15,470
1983	136,265	872,125	8,717
1984	**151,539**	**1,033,440**	**10,082** 3/

1/ MBF = thousand board feet.
2/ Transition quarter.
3/ Not all states reported.

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Table 56—Summary of selected cooperative forest management and processing activities by Region—fiscal year 1984

Assistance activity	Unit of measure 1/	Regions				
		Northern	Rocky Mountain	South-western	Inter-mountain	Pacific Southwest
Woodland owners assisted	Number	1,803	2,398	350	551	3,662
Assists to loggers and processors 2/	Number	61	434	76	29	281
Forest management plans prepared	Number	347	519	131	39	312
	M acres	21,765	25,553	254,603	7,889	64,853
Reforestation:						
Planting	Acres	449	426	438	910	7,246
Seeding	Acres	0	4	0	50	94
Management for natural regeneration	Acres	112	2,073	3,633	120	1,787
Timber stand improvement	Acres	1,339	2,227	781	879	4,640
Outdoor recreation development	Acres	2,042	2,237	9,494	308	1,338
Wildlife habitat development	Acres	124	6,551	9,825	233	28,920
Forested range improvement	Acres	240	5,728	9,468	1,423	19,697
Timber sale assistance volume harvested	M cubic feet	1,509	9,077	3,348	1,370	743
Improved utilization:						
Harvesting	M cubic feet	476	766	159	228	2,704
Primary processing	M cubic feet	997	1,565	0	0	871
Secondary processing and drying	M cubic feet	205	95	1	0	0
Fuel and byproducts	M cubic feet	55	687	40	497	260
Urban forestry assistance activities	Urban areas assisted	59	384	60	57	339
Referrals to consulting foresters	Number	58	225	11	5	639

1/ M = thousand.
2/ Not all states reported.

Table 56—Summary of selected cooperative forest management and processing activities by Region—fiscal year 1984—Continued

Assistance activity	Unit of measure 1/	Regions				Total
		Pacific Northwest	Alaska	Southern Region	North-eastern Area	
Woodland owners assisted	Number	7,419	215	71,410	63,731	151,539
Assists to loggers and processors	Number	0	0	3,420	5,781	10,082
Forest management plans prepared	Number	1,096	56	33,368	20,295	56,163
	M acres	72,777	11,590	2,263,090	1,041,152	3,763,272
Reforestation:						
Planting	Acres	19,704	329	371,849	47,483	448,834
Seeding	Acres	0	0	12,626	1,790	14,564
Management for natural regeneration	Acres	8,335	0	49,222	33,670	98,952
Timber stand improvement	Acres	37,253	69	201,205	71,321	319,714
Outdoor recreation development	Acres	0	320	54,712	60,217	130,668
Wildlife habitat development	Acres	3,035	600	295,950	128,198	473,436
Forested range improvement	Acres	2,532	0	36,063	4,473	79,624
Timber sale assistance volume harvested	M cubic feet	8,978	2,200	189,420	77,623	294,268
Improved utilization:						
Harvesting	M cubic feet	0	0	8,173	11,620	24,126
Primary processing	M cubic feet	0	0	9,956	10,599	23,988
Secondary processing and drying	M cubic feet	0	0	380	1,125	1,806
Fuel and byproducts	M cubic feet	0	0	17,897	10,673	30,109
Urban forestry assistance activities	Urban areas assisted	50	4	823	2,182	3,958
Referrals to consulting foresters	Number	189	12	5,813	8,398	15,350

Table 57—Summary of selected cooperative forest management and processing activities by State—fiscal year 1984

State, Territory, or Commonwealth	Woodland owners assisted	Reforestation assistance	Timber stand improvement assistance	Timber sale assistance--volume harvested	Assists to loggers and processors 1/	Improved utilization 1/	State nursery production
		Acres	Acres	1,000 cubic feet		1,000 cubic feet	1,000 trees
Alabama	5,035	40,627	45,357	7,609	78	4,618	63,516
Alaska	215	329	69	2,200	0	0	531
Arizona	110	1,987	180	709	76	200	0
Arkansas	1,364	16,623	1,978	266	11	4,957	13,481
California	3,250	8,578	4,626	161	224	3,177	3,832
Colorado	616	2,032	318	8,018	121	662	1,362
Connecticut	882	1,540	478	354	0	0	1,500
Delaware	776	1,784	145	989	0	0	149
Florida	3,969	52,128	15,833	9,725	64	7,728	73,581
Georgia	24,251	80,929	15,987	7,894	236	2,550	107,243
Guam	33	6	14	0	0	0	35
Hawaii	379	543	0	582	57	658	324
Idaho	849	269	367	704	21	1,056	527
Illinois	2,842	620	3,292	1,357	0	0	3,200
Indiana	2,314	7,091	5,712	2,223	701	4,693	4,453
Iowa	1,220	7,382	996	823	14	1,520	3,832
Kansas	829	369	258	424	57	167	180
Kentucky	1,421	3,597	2,238	2,674	0	0	8,934
Louisiana	1,457	13,359	31,135	600	45	545	76,000
Maine	1,664	1,670	1,536	2,447	375	6,649	1,833
Maryland	5,852	7,157	1,781	4,541	41	37	3,948
Massachusetts	2,614	12,442	5,847	10,752	17	1,042	0
Michigan	333	3,483	1,207	685	2	79	3,754
Minnesota	7,951	4,763	3,037	6,661	0	0	18,943
Mississippi	11,368	61,324	31,740	10,224	212	4,466	64,069
Missouri	2,248	3,197	3,376	4,977	2,091	1,076	7,436
Montana	581	177	837	765	35	648	1,048
Nebraska	697	84	89	49	23	33	0
Nevada	194	623	740	791	18	228	237
New Hampshire	5,619	990	3,388	5,369	379	936	364
New Jersey	691	930	311	793	20	513	418
New Mexico	240	2,084	601	2,639	0	0	0
New York	4,981	4,046	5,781	9,230	1,726	908	6,104
North Carolina	5,464	65,129	2,953	40,594	115	5,224	48,606
North Dakota	373	115	135	40	5	29	1,290
Ohio	2,594	1,634	4,017	2,910	16	9,212	6,493
Oklahoma	653	1,822	1,272	187	4	21	1,210
Oregon	5,771	22,803	30,277	257	0	0	14,759
Pennsylvania	2,644	1,760	2,383	2,479	219	1,911	4,040
Puerto Rico	1,966	581	175	26	0	0	739
Rhode Island	297	221	518	388	2	2,080	0
South Carolina	2,937	24,004	3,211	3,068	3	777	56,868
South Dakota	106	18	358	56	74	704	1,734
Tennessee	1,841	2,582	74	4,076	21	105	6,749
Texas	2,057	20,558	26,063	6,792	0	0	16,163
Utah	357	457	139	579	11	497	280
Vermont	2,507	194	2,126	2,783	84	1,305	650
Virgin Islands	18	10	15	0	0	0	7
Virginia	7,609	50,424	23,174	95,685	2,631	5,415	60,000
Washington	1,648	5,236	6,976	8,721	0	0	19,350
West Virginia	4,440	3,497	1,227	2,555	0	0	2,926
Wisconsin	11,262	18,542	24,163	15,307	94	2,056	19,199
Wyoming	150	0	1,204	530	159	1,547	0
Total	151,539	562,350	319,714	294,268	10,082	80,029	731,897

1/ Not all states reported.

Table 58—Works of improvement installed in watershed protection projects—fiscal years 1981-84 and total to date

	Unit of measure	1984	1983	1982	1981	Total 1954-84
Channel improvement	Miles	**0**	0	0	0	6.6
Channel stabilization	Miles	**0**	0	0	0	13
Contour terrace and furrows	Miles	**0**	0	0	0	916.7
Area treated	Acres	**0**	0	0	0	1,440.9
Gully control and stabilization	Miles	**0**	0	0	0.8	195.1
Grade stabilization structures	Number	**0**	0	0	0	3,296
Critical area stabilization by tree planting and other measures	Acres	**825**	464	490	219	44,773.8
Forest road and roadbank stabilization	Miles	**1**	2.2	38	14.7	1,949.2
Area treated	Acres	**12**	2.4	24	27.2	5,964.7
Fire roads, trails, and firebreaks and fuelbreaks	Miles	**19**	35.6	28.6	61	1,676.2
Fire control water developments	Number	**0**	0	0	0	43
Fire towers	Number	**0**	0	0	0	8
Intensified fire protection	Acres	**251,999**	56,230	10,830	20,075	2,640,329
Heliports and helispots	Number	**0**	0	0	0	42
Mobile fire equipment	Number	**8**	7	0	0	75
Other fire control improvements	Number	**1**	5	4	0	468
Radio installations	Number	**1**	0	0	0	53
Forest watershed management Plans prepared	Number	**748**	723	1,052	3,790	25,402
Area included	Acres	**39,979**	45,129	52,294	60,353	2,188,070
Forest stand improvement	Acres	**0**	0	0	0	1,082,466
Proper harvest cutting	Acres	**6,334**	7,463	11,768	9,555	553,492
Range and grass seeding	Acres	**133**	12	27	739	48,522
Tree planting and seeding	Acres	**7,003**	6,240	7,653	7,693	305,440
Revegetation, surface mined areas	Acres	**0**	1	916	700	3,422
Woodland thinning and release	Acres	**3,424**	3,372	3,387	3,824	716,016
Woodland grazing control	Acres	**2,685**	3,370	884	1,113	297,190
Recreation area development	Acres	**290**	145	753	88	33,050
Wildlife habitat development	Acres	**6,671**	5,910	2,969	2,094	45,315
Wildlife ponds	Number	**2**	0	3	4	84

Table 59—Works of improvement installed in flood prevention projects—fiscal years 1981-84 and total to date

	Unit of measure	1984	1983	1982	1981	Total 1944-84
Structural measures:						
Access road construction	Miles	108.5	107	0	6.0	375.5
Channel improvement	Miles	0	1	0	0	40.6
Channel stabilization	Miles	0	0	1	1.1	350.5
Diversion ditches	Feet	1,320	0	300	0	32,097.0
Floodwater retarding structures	Number	0	1	0	0	4.0
Grade stabilization structures	Number	0	0	0	0	1,690.0
Streambank stabilization	Miles	0	0	0	0	11.3
Land treatment measures:						
Critical area stabilization by tree planting and other measures	Acres	349	1,360	840	308.0	335,168.1
Forest road and roadbank						
Stabilization	Miles	38.3	34	77.9	478.0	2,773.0
Area treated	Acres	140	206	730	285.0	20,189.9
Forest watershed management						
Plans prepared	Number	593	599	1,933	1,169.0	25,166.0
Area included	Acres	34,935	25,588	56,566	82,553.0	2,181,580.0
Firebreaks and fuelbreaks	Miles	21	36	41	22.5	3,466.5
Fire roads and trails	Miles	2	46	0	38.0	624.6
Fire hazard reduction	Acres	6,810	5,479	2,025	587.0	27,026.3
Fire water developments	Number	1	1	0	0	187.0
Fire towers	Number	0	0	0	0	46.0
Heliports and helispots	Number	0	0	1	0	461.0
Mobile equipment	Number	0	0	0	0	120.0
Other fire improvements	Number	0	0	4	5.0	226.0
Permanent radio installations	Number	0	0	0	0	318.0
Proper harvest cutting	Acres	13,967	7,644	8,674	57,266.0	680,215.0
Forest stand improvement	Acres	0	0	0	490.0	660,954.0
Tree planting and seeding	Acres	3,914	1,792	5,841	8,506.0	525,421.0
Woodland thinning and release	Acres	2,376	1,410	2,669	5,704.0	458,486.0
Revegetation, surface mined areas	Acres	351	144	325	177.0	8,428.0
Woodland grazing control	Acres	60	412	614	3,567.0	191,035.0
Woodland owners assisted	Number	6,299	8,562	11,297	12,680.0	643,039.0

Table 60—Forest Research funding—fiscal year 1984 compared to 1981-84 average

	1984		1981-84 average 1/	Percent of actual to average 1/
	Actual	RPA		
	1,000 constant 1984 dollars 2/			
Appropriated funds:				
Land and resource protection research:				
Fire and atmospheric science	**7,783**	14,180	9,066	86
Forest insect and disease	**22,129**	36,070	22,937	96
Forest inventory and analysis	**12,128**	22,210	13,674	89
Renewable resources economics	**4,748**	9,280	5,247	90
Renewable resources management and utilization research:				
Timber management	**22,137**	36,240	22,452	99
Watershed management and rehabilitation	**11,242**	21,410	11,819	95
Wildlife, range, and fish habitat	**9,163**	18,360	9,496	96
Forest recreation	**2,085**	6,040	2,254	93
Forest products and harvesting	**17,988**	32,090	19,968	90
Subtotal	**109,403**	195,880	116,913	94
Research construction	**422**	13,930	1,223	35
Total, appropriated accounts	**109,825**	209,810	118,136	93
Reimbursable accounts	**5,192**	-- 3/	4,770	109
Grand total	**115,017**	209,810	122,906	93

1/ In order that a comparison may be made with 1984 actual, general administration has been eliminated from individual line items. Total appropriated general administration funds are included in the "General Administration" line item in tables 11 and 12.
2/ GNP implicit price deflator used for 1981-83.
3/ -- = not reported in the RPA.

Table 61—Forest Research funding—fiscal years 1981-84

	1984	1983	1982	1981 1/
			1,000 dollars	
Appropriated funds:				
Land and resource protection research:				
Fire and atmospheric science	**7,783**	8,484	9,014	8,600
Forest insect and disease	**22,129**	21,577	20,942	21,283
Forest inventory and analysis	**12,128**	12,337	13,332	13,292
Renewable resources economics	**4,748**	4,979	4,841	5,055
Renewable resources management and utilization research:				
Timber management	**22,137**	20,585	20,710	20,705
Watershed management and rehabilitation	**11,242**	10,961	11,400	10,678
Wildlife, range, and fish habitat	**9,163**	8,706	9,334	8,395
Forest recreation	**2,085**	2,146	2,150	2,060
Forest products and harvesting	**17,988**	17,897	20,422	18,385
Subtotal	**109,403**	107,672	112,145	108,453
Research construction	**422**	454	388	3,092
Total, appropriated accounts	**109,825**	108,126	112,533	111,545
Reimbursable accounts	**5,192**	3,563	4,545	4,570
Grand total	**115,017**	111,689	117,078	116,115

1/ In order that a comparison may be made with 1984 actual, general administration has been eliminated from individual line items. Total appropriated general administration funds are included in the "General Administration" line item in tables 11 and 12.

Table 62—Extramural research funded through the Forest Service—fiscal years 1983 and 1984

Type of recipient	1984		1983	
	1,000 Dollars	Number of grants	1,000 Dollars	Number of grants
Domestic grantees:				
Universities and colleges:				
Land-grant research institutions	5,408	313	6,300	337
S&E-CR 1/	225	3	373	5
1890 Land-Grant and predominately Black institutions	181	9	266	12
Other non-Land-Grant institutions	1,201	62	1,596	103
S&E-CR 1/	50	1	17	1
Subtotal, universities and colleges	7,065	388	8,552	458
Other domestic:				
Industrial firms	--	--	5	1
Profit organizations	34	3	61	5
Nonprofit institutions and organizations	134	8	158	12
Federal, State, and local governments	207	12	204	9
Private individuals	137	13	87	10
Small business innovation research	52	4	249	16
Subtotal, other domestic	564	40	764	53
Total, domestic	7,629	428	9,316	511
Foreign grantees:				
Universities and colleges	24	3	9	2
Government agencies	--	--	25	1
Nonprofit institutions and organizations	20	1	3	1
Private Individuals	1	1	--	--
Total, foreign grantees	45	5	37	4
Grand total	7,674	433	9,353	515

1/ Grants executed by Science and Education-Cooperative Research with Forest Service Accelerated Pest Program funds.

Table 63—Research publications by major subject area—fiscal years 1981-84

	Number of publications			
	1984	1983	1982	1981
Environmental Research:				
Watershed management	95	168	130	136
Wildlife	138	134	136	144
Range	88	101	50	46
Fisheries habitat	37	28	21	31
Forest recreation	59	87	60	71
Urban forestry	25	41	23	33
Disturbed areas rehabilitation	40	39	19	41
Atmospheric deposition 1/	13	--	--	--
Subtotal	495	598	439	502
Insect and Disease Research:				
Insect detection and evaluation	30	13	78	54
Insect biology	138	107	79	106
Insect control and management strategies	102	119	103	92
Disease detection and evaluation	10	8	21	34
Disease biology	55	85	78	59
Disease control and management	48	48	32	45
Air pollution	11	15	11	13
Mycorrhizae 2/	26	23	34	--
Wood products organisms	23	37	22	16
Subtotal	443	455	458	419
Fire and Atmospheric Sciences Research:				
Fire prevention, hazard reduction, and prescribed burning	11	18	24	22
Fire management methods and systems	27	37	24	13
Forest fire science	8	23	14	22
Ecological relations	19	27	16	29
Weather modification and weather effects	30	32	28	13
Subtotal	95	137	106	99
Timber Management Research:				
Biological relations	130	117	73	106
Silviculture	223	181	167	112
Management mensuration	70	66	60	91
Genetics and tree improvement	89	104	82	76
Special products	9	20	11	4
Subtotal	521	488	393	389

Table 63—Research publications by major subject area—fiscal years 1981-84—Continued

	Number of publications			
	1984	1983	1982	1981
Economics and Marketing Research:				
Forest resource evaluation	**119**	99	92	88
Forest economics	**142**	128	122	60
Supply, demand, and price analysis 3/	--	--	--	34
Subtotal	**261**	227	214	182
Products and Engineering Research:				
Forest engineering systems	**66**	50	38	39
Wood engineering	**43**	53	49	44
Chemistry, fiber, and fuel products	**84**	91	72	71
Utilization potential and processing of wood	**126**	130	98	141
Protection of wood in use 1/	**24**	13	14	--
Subtotal	**343**	337	271	295
General 1/	**31**	17	28	--
Grand total	**2,189**	2,259	1,909	1,886

1/ This subject area was not reported separately prior to 1984.
2/ This subject area was not reported separately in 1981.
3/ This subject area was combined and reported with Forest economics beginning in 1982.

• REVISED • STATEMENT • OF • POLICY •

Pursant to section 310 of Public Law 96-514, dated December 12, 1980:

The Statement of Policy transmitted by the President to the Speaker of the House of Representatives and the President of the Senate on June 19, 1980, as required under section 8 of the Forest and Rangeland Renewable Resources Planning Act of 1974, is revised and modified to read as follows:

Basic Principles

It is the policy of the United States--

(1) forests and rangeland, in all ownerships, should be managed to maximize their net social and economic contributions to the Nation's well being, in an environmentally sound manner.
(2) the Nation's forested land, except such public land that is determined by law or policy to be maintained in its existing or natural state, should be managed at levels that realize its capabilities to satisfy the Nation's need for food, fiber, energy, water, soil stability, wildlife and fish, recreation, and esthetic values.
(3) the productivity of suitable forested land, in all ownerships, should be maintained and enhanced to minimize the inflationary impacts of wood product prices on the domestic economy and permit a net export of forest products by the year 2030.
(4) in order to achieve this goal, it is recognized that in the major timber growing regions most of the commercial timber lands will have to be brought to and maintained, where possible, at 90 percent of their potential level of growth, consistent with the provisions of the National Forest Management Act of 1976 on Federal lands, so that all resources are utilized in the combination that will best meet the needs of the American people.
(5) forest and rangeland protection programs should be improved to more adequately protect forest and rangeland resources from fire, erosion, insects, disease, and the introduction or spread of noxious weeds, insects, and animals.
(6) the Federal agencies carrying out the policies contained in this Statement will cooperate and coordinate their efforts to accomplish the goals contained in this Statement and will consult, coordinate, and cooperate with the planning efforts of the States.
(7) in carrying out the Assessment and the Program under the Forest and Rangeland Renewable Resources Planning Act of 1974 and the Appraisal and the Program under the Soil and Water Resources Conservation Act of 1977, the Secretary of Agriculture shall assure that resource and economic information and evaluation data will be continually improved so that the best possible information is always available for use by Federal agencies and the public.

Rangeland Data Base and its Improvement

The data on and understanding of the cover and condition of rangelands is less refined than the data on and understanding of commercial forest land. Rangelands have significant value in the production of water and protection of watersheds; the production of fish and wildlife food and habitat; recreation; and the production of livestock forage. An adequate data base on the cover and condition of rangelands should be developed by the year 1990. Currently, cattle production from these lands is annually estimated at 213 million animal unit months of livestock forage. These lands should be maintained and enhanced, including their water and other resource values, so that they can annually provide 310 million animal unit months of forage by the year 2030, along with other benefits.

General Acceptance of High Bound Program

Congress generally accepts the "high-bound" program described on pages 7 through 18 of the 1980 Report to Congress on the Nation's Renewable Resources prepared by the Secretary of Agriculture. However, Congress finds that the "high-bound" program may not be sufficient to accomplish the goals contained in this statement, particularly in the areas of range and watershed resources, State and private forest cooperation and timber management.

States and owners of private forest and rangelands will be encouraged, consistent with their individual objectives, to manage their land in support of this Statement of Policy. The State and private forestry and range programs of the Forest Service will be essential to the furtherance of this Statement of Policy.

In order to accomplish the policy goals contained in this statement by the year 2030, the Federal Government should adequately fund programs of reasearch (including cooperative research) extension, cooperative forestry assistance and protection, and improved management of the forest and rangelands. The Secretary of Agriculture shall continue his efforts to evaluate the cost-effectiveness of the renewable resource programs.

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The Forest Service
United States Department of Agriculture